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COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

DEPARTMENT OF INFORMATION SCIENCE

**CHALLENGES OF PRESERVING MULTIMEDIA ARCHIVES IN THE
ETHIOPIAN BROADCASTING CORPORATION (EBC)**

BY

ASCHALEW TASEW

OCTOBER, 2023

ADDIS ABABA, ETHIOPIA



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**A THESIS SUBMITTED TO AAU SCHOOL OF INFORMATION SCIENCE IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE IN INFORMATION SCIENCE AND SYSTEM**

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ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY
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APPROVAL SHEET

This is to certify that the thesis prepared by Aschalew Tasew entitled as “challenges of Preserving of Multimedia Archives in the Ethiopian Broadcasting Corporation (EBC) is submitted in Partial Fulfillment of the Requirements for the Degree of Master of science in Information Science and System compiles with the regulations of the university and meets the accepted standards with respect to originality and quality.

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DECLARATION

I declare that, this thesis prepared for the partial fulfillment of the requirements for the Degree of Master of science in Information Science and System entitled “**Challenges of Preserving Multimedia Archives in the Ethiopian Broadcasting Corporation (EBC)**” is my original research work prepared independently by my own effort with the close advice and guidance of my adviser. I also declare that this thesis has not been presented in any university and all sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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LIST OF ACRONOMYS

AV	Audio-Visual
CD	Compact Disc
DVD	Digital Versatile/Video Disc
EBC	Ethiopian Broadcasting Corporation (EBC)
EBU	European Broadcasting Union
EP	Extended Play
ESARBICA	Eastern and Southern Africa Regional Branch of the International Council on Archives
FTP	File Transfer Protocol
IASA	International Association of Sound and Audiovisual
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
IFLA	International Federation of Library Associations and Institutions
LP	Long Play
SABA	Southern African Broadcasting Association
SADC	Southern African Development Community
SP	Single Play
UNESCO	United Nations Educational, Scientific, and Cultural Organization

ABSTRACT

Multimedia records typically receive less attention because they are not as well-known as printed materials in numerous developing nations. Because of this, the multimedia archive preservation of the Ethiopian Broadcasting Corporation (EBC) is not particularly noteworthy.

In order to provide multimedia archive preservation and design techniques and technologies used to preserve multimedia materials in the context of the EBC, the goal of this thesis is to examine the current issues impacting the company.

The study used a mixed methodology and a descriptive research design. Relevant information for this study data was acquired from both sources, both primary and secondary. Original data was acquired. Through a questionnaire from the 32 selected respondents, interview with 11 purposively selected respondents and direct observation. Secondary data sources such as Operation manuals, reports that have been published and unpublished, and other pertinent paperwork were also used.

The finding of this study demonstrates that poor preservation policy implementation, funding restrictions, inadequate environmental safeguards, under-trained personnel, and technology Out datedness is the difficulties impeding the work of EBC's archival staff. The findings of this study will increase awareness of the significance of properly preserving audio-visual records for future use.

Additionally, it is hoped that the study's conclusions will encourage policymakers and decision-makers to create and carry out training and development initiatives that enhance knowledge and methods for protecting audio-visual records in EBC. The results of this study will also help decision-makers become more interested in creating long-term strategies to preserve audio-visual records. It is anticipated that the results of this study will provide guidance for the creation and management of functional archival repositories that are prepared to handle archival records at EBC and at the national levels. The main goals of a study should be to advance practice, develop policy, and add to the corpus of existing knowledge.

The study suggested that EBC should create and put into practice a policy for the preservation of multimedia content, set aside adequate funds for digitalization, and empower personnel by providing ongoing training in multimedia preservation.

Keywords: Preservation, Multimedia, Ethiopian Broadcasting Corporation, Challenges, Archives

CHAPTER 1

INTRODUCTION

This chapter explains the study's general background, the research problem, the objectives, the research question, the study's scope and significance, its limitations, and how the paper is organized.

1.1. Background of the study

Today's sophisticated and technologically savvy society is constantly surrounded by the idea of multimedia in many different contexts. One aspect of the contemporary electronic revolution that is changing the way we send and receive information is multimedia (Hormeku, 2016). The use of multiple media formats (e.g., text, audio, graphics, animation, video, and interactivity) to communicate information is known as multimedia. Furthermore, it is critical to realize that multimedia is the integrated presentation of text, graphics, video, animation, and sound through the use of computers (Wright et al., 2009). Most of the time, multimedia is thought to improve user experience and lead to a simpler and quicker understanding of the information presented. It can take many different forms, from a basic PowerPoint to an intricate interactive simulation (Learning Circuits) (Hormeku, 2016).

Multimedia connects cultures, teaches, and unearths a people's history; conserves the nation's documented history; expresses the nation's artistic output from the beginning of time; and acts as a concrete source of defining evidence that makes the past audible or visible, as though it has been rebuilt (Ncala, 2017). Although the idea of presenting information in different formats is not new, when it comes to multimedia, it usually means presenting data in different digital formats for accessibility and preservation (Wright et al., 2009).

Two key issues are crucial in this regard: the introduction of information and communication technologies has resulted in a variety of documentation and storage formats and media. These technologies have revealed, for the first time, that the majority of these media have too short or unknown lifespans. Second, one of the challenges for preservation, especially in terms of ensuring long-term access to the intellectual contents of machine-dependent documents, is the high turnover of these technologies, which has led to media and equipment obsolescence (Akussah, 2011). This situation has increased interest in document digital preservation. stored in multimedia formats.

Preservation is the entirety of what is necessary to guarantee the visual or auditory content or other essential attributes of the work in question are permanently accessible with the least amount of quality loss. Access, feedback, inspection, preservation, restoration, replication, monitoring, collection management systems, storage settings, and recommended practices are thus included (Akussah, 2011; Wright, 2012). Because the content carried on physical carriers runs the risk of deteriorating, disappearing, or becoming inaccessible, multimedia preservation shouldn't be put off (Casey, 2015). A greater emphasis has been placed in recent years on the value of maintaining multimedia collections. The World Day for Audiovisual Heritage was established by UNESCO on October 27 in order to honor this (Nordenstreng, 2010).

As per Akussah's (2003) findings, the final quarter of the 20th century witnessed the creation of a mass of computer-generated and electronically stored documents, which replaced the conventional paper format. Eventually, these kinds of records find their way into archives where they are preserved. The basic prerequisites for the preservation of multimedia content are not unlike from those of other types of media, like paper and microfilm (Hormeku, 2016). However, due to the delicate and brittle nature of multimedia materials, their preservation necessitates greater care (Ngulube, 2003). Because of their nature, multimedia materials are a complicated and challenging media to archive. Among other things, the rapid advancement of technology makes it easy for multimedia content to be produced, shared, debated, withdrawn, and ultimately removed within a short period of time.

Thus, preservation techniques are now essential to guaranteeing that recorded material is protected and available for use in the future, even in the event that the recording format and related playback equipment are no longer easily obtainable (Schüller and Häfner, 2014). It is evident that no nation or media, no matter how far along it is in digitization and long-term preservation plans, will be able to fully prevent some collections from being destroyed by natural or man-made disasters, decay, or other causes (Assmann and Mearns, 2015). In this regard, the Ethiopian Broadcasting Corporation (EBC) is no exception, and it risks losing a large portion of its broadcast collections and archives if it is not properly managed. Thus, the purpose of this research will be on broadcasting archives and their preservation in Ethiopian Broadcasting Corporation (EBC).

1.2. Statement of the problem

Multimedia archives or materials are a vital component of heritage, and collective memory and identify all our yesterdays (Hollink et al., 2009). Just like their paper counterparts, they need to be managed and preserved properly to ensure that they are continually accessible for consultation. According to Edmondson (2004), multimedia materials include non-literary or graphical materials like photographs, maps, manuscripts, slides, and other visual works chosen on their own, as well as sound, radio, film, television, video, or other productions comprising moving images and/or recorded sounds, whether or not they are primarily intended for distribution to the public. Because of their intricate construction and multiple layers, they differ from paper (Forde, 2014).

Because multimedia materials are brittle and hardware and software age quickly, there are issues that must be resolved and proactive measures taken to prolong the life of the materials and the systems that produce them (Hormeku, 2016). To put it briefly, reusing digital information may be hampered by the need for hardware and software that evolve with technology. Because of its well-established benefits, archivists appear to be compelled to adopt digital technology (Rakemane and Mosweu, 2021). But as of right now, a number of crucial problems pertaining to the long-term preservation of digital materials are still unresolved (Hormeku, 2016).

Multimedia archives receive less attention in many developing nations because they are not as well-known as printed materials (Mensah et al., 2017). It could be argued that cultural heritage institutions in many developing nations have not implemented the safeguards necessary for multimedia material management and preservation (Rakemane and Mosweu, 2021). Among these are disaster preparedness plans, education and training programs, collection development policies, regular maintenance and cleaning schedules, collaboration with other institutions, and environmental control for multimedia materials. Multimedia materials encompass a variety of media, such as sound recordings, film, graphic materials, electronic resources, maps, and microform. Multimedia archive preservation has always been a cause for concern that necessitated quick action, especially in Sub-Saharan Africa (Rakemane and Mosweu, 2021). There are either none or very few research studies on the preservation of multimedia in Ethiopia and throughout Sub-Saharan Africa. For instance, Mnjama (2010) and Abankwah (2011) expressed dissatisfaction over the lack of attention paid to the management and preservation of

multimedia (audio-visual) materials were not given the attention they deserved. Despite their significant contribution to the preservation of cultural heritage, AV materials are not managed throughout their lifecycle in some countries under the Eastern and Southern Regional Branch of the International Council on Archives (ESRABICA), according to Abankwah (2011).

Furthermore, research by Abankwah (2011), Mnjama (2010), Lukileni-lipinge and Mnjama (2017), Mensah et al. (2017), and Ncala (2017) conducted in Botswana, Namibia, South Africa, Ghana, and the ESARBICA region as a whole has identified lack of funds, poor infrastructure, and a lack of skilled personnel as inherent challenges in the management and preservation of multimedia (AV) archives. Furthermore, Hormeku (2016) identified major obstacles to the preservation of multimedia materials in Ghana's Ministry of Information and Media Relations include finances, space, policies, logistics, and storage conditions.

The preservation of multimedia in Ethiopia expressed dissatisfaction over the lack of attention paid to the management and preservation of multimedia (audio-visual) materials were not given the attention they deserved. There is still much work to be done in EBC's archive management systems, as a next step toward digital archiving initiatives, because preserving archives is one of the neglected area in the institution.

The challenges and the unfavorable preserving way that taking place is one of the main problems EBC faced. A visit to the EBC revealed that the current multimedia collection is in good position but the large part of the preservation of past multimedia materials which are located at the branch office is not in good working order. It is difficult for researchers, students, and the general public to obtain this historical material. The room where multimedia resources are kept lacks proper environmental conditions. Because of this, Ethiopia's historical legacy is being lost by the EBC, and the next generation will be ignorant of their own identity. Therefore, it is important to keep multimedia content in EBC to preserve Ethiopia's heritage. Thus, the present study focuses on the difficulties associated with the preservation of multimedia materials, and suggest strategies for resolving them.

Research questions

Therefore, the study attempted to address the following research questions in order to accomplish the aforementioned goals:

- ✓ What are the major challenges affecting the multimedia archive preservation in EBC?
- ✓ What preservation strategy is appropriate for EBC?

1.3. Objective of the study

1.3.1. General objective

This study's primary goal is to identify obstacles to the appropriate preservation of multimedia archives in the Ethiopian Broadcasting Corporation (EBC) so as to propose strategies.

1.3.2. Specific objectives

The general goal mentioned above serves as the foundation for the formulation of the following specific goals. received

- ✓ Assessing the nature of multimedia archives available in EBC
- ✓ Reviewing literature on Multimedia Archive Preservation Methods and techniques
- ✓ To determine the obstacles obstructing the maintenance of multimedia archives at EBC
- ✓ To make recommendations on how to better preserve multimedia archives at EBC

1.4. Research questions

Therefore, the study attempted to address the following research questions in order to accomplish the aforementioned goals:

- ✓ How come the nature of multimedia archives in EBC?
- ✓ What are the major challenges affecting the multimedia archive preservation in EBC?
- ✓ Which strategies should be employed for the preservation of multimedia archives in EBC?

1.5. Significance of the study

The Ethiopian Broadcasting Corporation (EBC) has employed an assessment of the state and obstacles surrounding multimedia preservation in order to develop plans of action and make decisions regarding the improved management of multimedia content. Given that it outlined the different methods for preserving multimedia materials to correct irregularities and guarantee their longevity, this study would be pertinent to the EBC. Policymakers would also benefit from this study. Other media organizations would also benefit from this study because it raised important questions about appropriate preservation techniques for information services and resources. Additionally, the study would provide a forum for organizations to interact,

communicate, and exchange knowledge regarding the significance of maintaining vital records. Ultimately, the research would contribute to the corpus of knowledge in the preservation field and provide a foundation for additional studies on multimedia preservation.

1.6 The scope of the study

The Ethiopian Broadcasting Corporation (EBC) was the exclusive subject of the study, which concentrated on multimedia material preservation. Film, video, and sound recordings are examples of analog and digital physical carriers that the researcher examined. Videotapes, CDs, DVDs, and audiotapes are examples of real tapes, audiotapes, and phonographs. The EBC was chosen because it is the primary operational broadcasting organization in Ethiopia that deals with multimedia materials and has a long history in multimedia archives. For public relations a firm operating both domestically and abroad, the EBC is a primary information source. Raising public awareness of government initiatives and activities was also

1.7 Limitations of the Study

A constraint of the research was the absence of detailed literature or publications on multimedia preservation at the EBC. To solve this challenge, the researcher explored written documents on multimedia preservation in EBC and interviewed experienced experts on the preservation of multimedia in EBC.

1.8 Organization of the study

There are five chapters in this thesis. Given its concise introduction to the subject, the first chapter could be regarded as an introductory chapter. The research questions, objectives, issue statement, and so forth. A review of the literature is covered in the second chapter, along with a brief explanation of the theoretical underpinnings and a few earlier publications that are pertinent to the current study. A comprehensive explanation of the techniques used for data collection and analysis is covered in detail in the third chapter. The results and discussion are covered in chapter four, and the study's conclusion and recommendations are presented in chapter five.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

An Overview of Public Service Broadcasting Historically

The British public service broadcasting model, first implemented in 1927 by John Reith, the BBC's first Director-General (BBC, 2006), became that broadcasting model for then commonwealth countries, Africa, Asia, and the Middle East, where it was accepted as an ideological framework and protected by regulation (Teer-Tomaselli & Bofo, 1996). Broadcasting became a crucial aspect of individuals' lives and the capacity for radio to penetrate deep into rural areas made it an extension of communal life. Although television has expanded its influence in urban areas, the high costs of sets, the lack of electricity, and limited coverage resulted in a relatively low penetration of television broadcasts (Kupe, 2003). Figure 1 indicates when the various Public Service Broadcast services mentioned in this study were established.

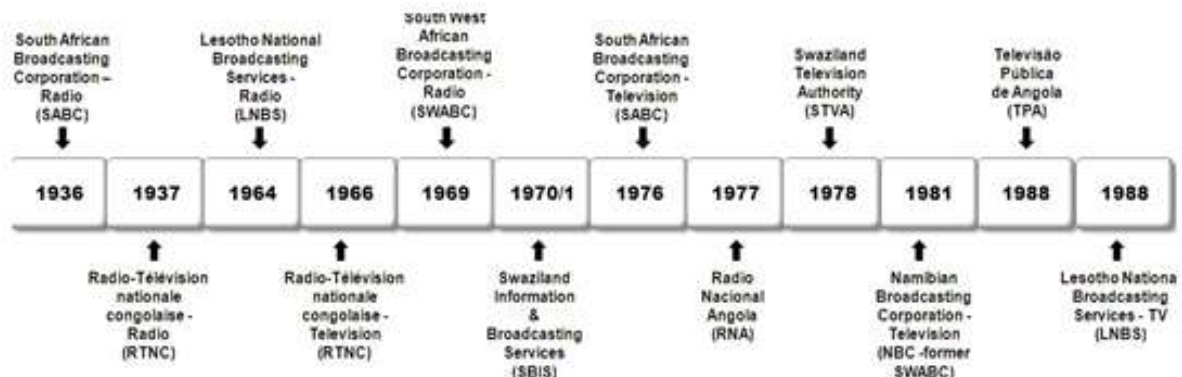


Figure 1. Timeline: SADC Public Service Broadcasters⁹ (SABA, 2022, Taylor, et al., 2022:15 and ANGOP, 2022)

Understanding the role of public service broadcasting with this research will aid in comprehending the public's role. service broadcasting archives within its organization, and whether the mandate to preserve the public service broadcaster's legacy is sufficiently executed and supported.

2.1. The Establishment of Broadcasting Archives

It is not clear when the first broadcast archive was established, but the BBC Sound Archive, founded in 1936, is among the oldest. Rooks (BBC, 2022), BBC Sound Archivist, explains that although the BBC was established in 1922 the first “Recorded Programs Librarian” (BBC, 2007) was appointed in 1941. According to Rooks (BBC, 2007) the BBC realized that broadcast recordings had historical significance and future value for broadcasters.

Broadcasting archives were largely established to preserve broadcast material to assist with the re-use of material in productions (The Library of Congress, 2022). However, broadcasting archives were established sometimes years after the broadcasting corporations were established (BBC, 2022). Broadcasting archives’ role gradually evolved to support the public broadcaster’s mandate by making the material available to a wider audience beyond the broadcaster. In addition, through legislation embodied in Legal Deposit Acts, Broadcast Acts, and/or National Archive Acts, public broadcasters, as public organizations, were and are obliged to preserve their audiovisual collections.

2.2. Preservation

Reitz (2022) defines “preservation” as the “totality of the activities associated with maintaining the library and archival materials for use, either in their original physical form or in some other usable way, or in the restoration of damaged or deteriorating documents”. Access and preservation go hand in hand. and according to Edmondson (2004) are “two sides of the same coin”. Edmondson (2004) argues that these two concepts are interconnected to such an extent that access can be seen as a necessary component of preservation. In this regard, Kaufman’s (2022) view is based on the digitization of collections and the expectation from the public to have access to material that was previously inaccessible: preservation for access, access for preservation.

Wright (2006) is explicit about the responsibility broadcasting archives have to understand that preservation is a “form of essential maintenance, and therefore just as deserving of a regular budget and associated activities – as for any other sort of maintenance”. Wright (2006) also distinguishes between conservation, preservation, and restoration. While conservation is

concerned with maintaining originals and preservation about ensuring long-term accessibility “with the maximum integrity” (Wright, 2006), Restoration uses methods to bring back the original formats so that old media can be enjoyed as if they were new.

Preventing damage to the collections and preserving their use in current and future systems is, in essence, the aim of any preservation effort (Media Matters, 2004). According to Media Matters (2004), preservation guidelines ought to be developed in order to preserve the “usability and the inherent value of source materials for future historical analysis”. In the digital landscape, the “preservation file format should maintain the highest level of usability possible” (Media Matters, 2004).

Numerous factors, including a lack of funding and staff as well as the political will on the part of organizations to support archives in the long-term preservation of their collections, can have a negative impact on preservation. Media Matters (2004) feels that these factors impact “acutely” preservation actions in the audiovisual archives. “Tapes are [mostly] neglected because of staff constraints. The problem of tape volumes outstripping an archive’s staff resources is evident throughout the field of audiovisual preservation and it shows no signs of abating” (Media Matters, 2004). Ward (1990) points out that the importance of content preservation has surpassed carrier preservation due to the brittleness and increasing obsolescence of technology used to play back audiovisual carriers. In order to preserve content for a longer period of time, it was frequently necessary to copy it to the same or a different medium (IFLA, 2004). The favored method of content duplication has shifted to digital. Teper (2005) on the other hand is doubtful that digital technologies will overcome the skepticism regarding the permanence and integrity of digital media.

Numerous factors can contribute to the lack of dedication towards the preservation of information resources in archives. Financial limitations are a significant issue, but Akande (2009) contends that lack of knowledge about preservation is a much more pressing issue. In a similar spirit, Ngulube (2005) believes that a lack of preservation knowledge, in addition to resource constraints, is the true issue with effective, realistic preservation programs, including climate control and monitoring. He cautions that the preservation of materials may suffer and abilities (Ngulube, 2005). According to Ngulube (2005), “environmental control and monitoring

as a collection management strategy” has been neglected globally, and more so in developing countries.

2.3. Challenges faced by Broadcasting Archives

Broadcasters across the world have lost valuable material. Wylie (2006) believes there are many reasons why broadcasters did not record or collect material or even erased the material. Wylie (2006) explains that the reasons for the lost material are largely due to broadcasting being treated as “ephemeral and culturally insignificant” during the early years. Live transmissions were and still are often not recorded for preservation or possible re-use purposes. Due to the high costs of carriers, the content was often erased and carriers re-used it to save costs.

Over time broadcasting archives have started to make an effort to recover lost material. For example, Springbok Radio, the commercial radio station for the SABC during the 1950s and 1960s became a phenomenal success during the years before television in 1976 in South Africa (Buys & Assmann, 2022). Owing to the commercial nature of the radio station and the re-use of tapes to record programs, very little of Springbok Radio has survived. During the 1990s it was discovered that enthusiasts had collected the material over the years and in 2022 the collection was formally handed back to the SABC by the Springbok Radio Society (Buys & Assmann, 2022).

2.3.1. CollectionBuilding

The range of content and selection of material in an archival collection increases or decreases the usability and research value of the archives. Broadcasting, as Wylie (2006) has pointed out is short-lived and unless “recorded, collected and preserved” no evidence of the broadcasts will exist (Wright, 2009). De Lusenet (2007) states that archives act as “representatives of a “culture” in a certain period” and by safeguarding the collections as evidence, play the role of “historical-cultural centers”. Public Service Broadcasting archives collect broadcasts, either pre-recorded or off- air, as evidence of this cultural heritage although, when selecting the material for preservation may not have a cultural heritage in mind (De Lusenet, 2007). “The recognition that what is considered trivial today may be of serious interest to future generations thwarts any attempt to demarcate cultural heritage. It may seem paradoxical that a television program broadcast tomorrow should be saved in the framework of heritage policies unless we understand

heritage (also) as “what we wish to pass on to future generations” (De Lusenet, 2007). Ide and Weisse (2003) argue that broadcast materials are the primary source material for the study of the century's history and culture.

De Lusenet (2007) suggests that collecting broadcast material for long- term preservation implies “judgment” which, through the process of selection raises the “present-day cultural production” to a status of “heritage to-be”. According to De Lusenet (2007), selection criteria assist with the decision-making process in terms of which broadcast material to preserve and make the selecting of material more transparent. But, De Lusenet (2007) warns that the use of selection criteria may overrule “judgment of value”, which may lead to important omissions from the archives (De Lusenet, 2007).

Although broadcasting archives, due to the nature of broadcasting, hold a significant part of a country's history, its primary reason for existence was for re-use or re-broadcasting material (Fønss Jorgensen, 2001). Restrictions to the re-use of content often prevent the broadcasting archives from collecting material. Fønss Jorgensen (2001) believes that copyright and access restrictions should not deter an archive from collecting material as it is important to acquire material “according to the purpose of the archive” and to prevent further losses.

2.3.2. Access

As early as 1986, Bergeron (1986) noticed a growing interest by researchers in television recordings as “primary sources”. The International Council for Archives (ICA) (2022) recommended archivists provide the widest possible access to archives while respecting restrictions imposed by legislation and/or licensing agreements. González Hernández (2005) also noticed an increased public demand for access as awareness of cultural heritage is increasing.

Digitization provides broadcasting archives with the potential to open the archives “to full access” (Wright, 2006). According to Wright, the digitization of the archives is a differentiating factor between a physical and a digital archive as digital files can be distributed electronically and allows the archives to provide a better service. But, archivists will have to carefully consider legal issues, such as copyright restrictions and ownership of material (Wright, 2006).

ICA (2022) is explicit about the archivists' professional responsibility to promote access to archives, which include a wide variety of means such as the Internet, web-based publications, and printed materials among many other initiatives. Archivists need to be pro-active in promoting their collections and in doing so, provide a service to users which will allow access to collections. Concerning broadcasting archives, this responsibility includes knowledge and experience of the relevant technology to provide users with an informed service and to ensure the quality of audio and visuals.

2.3.3. Audiovisual Carriers and Formats

The aging of audio and video formats and the growing obsolescence of its playback equipment pose a problem “not previously encountered in broadcasting: all broadcast archive material from the beginning of broadcasting to roughly the end of the 1980s is now at risk” (Wright, 2009). Wright (2009) writes that a survey of ten major broadcasting archives in Europe found “about 1 million hours of film, 1.6 million hours of video recordings and 2 million hours of audio recordings in the ten archives”. Analog formats that formed the largest part of the collections were shellac and vinyl disks (20%), ¼"-tapes (72%) followed by U-Matic (16%) and Betacam (32%). (Wright, 2009). It was concerning that approximately half of the material had signs of deterioration and that the remaining half was too brittle to be used. Casey (2009) warns that fragile carriers are often, apart from age, the result of inappropriate handling of the carrier and the technology, as well as the lack of timely intervention when technical problems occurred during the transfer.

Schüller (2008) argues that “digital technology has conquered audiovisual production, post-processing, and archiving” and that both audio and video have or soon will be absorbed by the IT world. It's noteworthy to observe that Boston (1998) became conscious of the obsolescence of dedicated software and operating systems as early as 1998. This trend implies that strategies for the migration of data also have to be considered in the context of ensuring the availability of the content (Media Matters, 2004). While the concept of audiovisual preservation is a constantly-changing process owing to changes in technology, the preservation of the content rather than the carrier or format must be encouraged (Häfner, 2000; Ward, 1990). Content on the older formats must be transferred to newer technology to safeguard the content before it is too late. The choice

of technology has to be carefully considered as not all digital carriers are considered reliable or suitable for long-term storage, e.g. flash drives (ARSC Technical Committee, 2009) or DAT and Mini-Discs which have become obsolete or obsolescent (refer to List of Sound and Audiovisual Formats (Carriers, p xii). The transfer of content to a digital file domain as a preferred means of keeping the content safe must be equally carefully considered (Boston, 1998).

2.3.4. Playback (replay) Technology

Because broadcasters strive for constant renewal in the quest for better broadcast quality and sophisticated broadcast studios, broadcasting archives have to be aware of and adapt to technological innovation and changes. The impact of the broadcaster's innovative technological advances as well as market demands on broadcasting archives, however, are seldom taken into account (Council on Library and Information Resources, 2006). The result is that broadcasting archives are forced to keep different kinds of playback equipment that could eventually become out of date in the business sector.

Most of the analog recording and playback equipment is either obsolete or facing obsolescence because manufacturers no longer produce the machines or sell spare parts (Media Matters, 2004). Specialists who still have the skills to maintain analog equipment may not be available for long (Media Matters, 2004) and the transfer of audio and video content equally demands expertise (Casey, 2009) as expressed in international best practices (Casey, 2009).

According to Wright (2009), the European broadcasting archives and the technology industry started work to “develop solutions and standards”. European broadcasters have realized the opportunities offered by digitization concerning storage and access (Wright, 2009) and under the auspices of Presto (European Broadcast Archives Preservation Technology) (Presto, undated), launched initiatives to preserve content through “cost-effective technology and processes”.

2.3.5. Storage

a) Physical Formats

Schüller (2008) states that the preservation of physical audiovisual carriers, regardless of the format (mechanic, magnetic or digital) requires ‘proper temperature, humidity,, and safety storage conditions’. González Hernández (2005) has observed that archive buildings are often not built with long-term preservation in mind. As a result aspects such as climate control, shelving, and disaster prevention such as fire and water flooding are often not catered for.

Physical carriers' life expectancy is primarily influenced by temperature and relative humidity.(RH), wherein they are kept (IFLA, 2004). According to (Media Matters, 2004) the control of the environment or climate is the single most important factor to slow down deterioration. This view is supported by Casey (2009). According to Casey (2009), research has shown that “lower temperature and RH can greatly improve material stability”. Casey (2009) points out that this view is supported by the International Organization for Standardization (ISO). IFLA (2004:6) states the fact that the “physical and chemical integrity” of the original carriers must be maintained to ensure the signal retrieval Within the “same or of a better quality” like when it was documented.González Hernández (2005) recommends the following conditions for

Table 1. Storage Conditions for Audiovisual Material

TYPE OF MATERIAL	TEMPERATURE		RELATIVE HUMIDITY	
	Minimum	Maximum	Minimum	Maximum
Type of Format				
Compact discs	10°C	21°C	40%	55%
Magnetic tapes	4°C	16°C	40%	60%
Electronic documents	5°C	32°C	20%	80%
Black and white film	<20°C		30%	
Colour film	2°C		30%	
Photographs	15°C	25°C	30%	50%

material stored:

b) Digital Storage

Phillips (2010:10) regards digital storage and digital preservation as “processes” and differentiates between them. According to Phillips (2010), regarding digital storage, “keeping a defined sequence of bytes” whereas the goal of digital preservation is “understand the information held in those bytes at a later stage”. In order to maintain both the bits and bytes and the information content, a storage service must assist the preservation system (Phillips, 2010).

Larson (2022) recommends that organizations conform to the Open Archival Information Systems (OAIS) Reference Model from the International Organization for Standardization (ISO). According to Larson (2022), OAIS assists with on-going long-term preservation and concerns itself with the effects of evolving technology and the availability of new data formats and media.

C) Rights Management

Copyright often restricts the ability of archives to fulfill their missions of preservation and access, particularly non-commercial archives holding large quantities of copyrighted material still considered by the rights owner to have commercial value.

In this regard, IASA (2022:9) advises that archives have no alternative but to comply with copyright laws. This implies that audiovisual archives need to be aware of such legislation and must ensure that processes are in place to minimize the unauthorized material by the archive or any other person that has access to the material (IASA, 2022:9).

Klaue (1997:25) feels that the most important aspects of audiovisual archiving are covered by copyright. This includes acquisition, copying, and the use of audiovisual material. Copyright prohibits unauthorized duplication or use of the original works and offers legal protection to publishers and creators of published works. Content in the public domain, on the other hand, is free to be copied, distributed, or displayed. These materials bring new opportunities as they can be molded into new products and thereby provide “new means of access to historical materials” (Oakley, 1990).

In addition to legislation, internal archive policies should be in place to govern and protect archives and the use of their holdings. According to Fønss Jorgensen (2001) the focus on copyright and the realization that it is necessary to negotiate agreements with the right holders to enable access to the collections will save broadcasting archives from trying to clear copyright at a later stage when the author or the publisher may no longer be available. Naron (2008:3) points out that the copyright for media is “complex and the issues surrounding the digitization of media frequently confound professional legal experts”. But, at the same time, no interpretation of copyright suggests that an archive cannot intervene to prevent valuable content from becoming unusable due to physical decay. Naron (2008) suggests that rights issues should be considered before items are digitized. As an example to overcome the complexity of copyright and rights management while giving access to collections, Hans and De Koster (2004) cites the German public broadcaster, ARD. ARD has linked its archive and rights management databases with a color code to inform users of the access and usage possibilities.

The EBU (Hans & De Koster, 2004) recommends “Rights” as a core field within its recommended metadata schema to not only ensure that archivists are aware of the rights associated with the content but to also allow archivists to intervene when necessary. Archivists, therefore, need the necessary ability and training to oversee the rights of the content in their custody meaningfully.

2.3.6. Training

Training and development are critically needed, according to Southern African literature on audiovisual archives (Matangira, 2003; Maseko, 2022; Mnjama, 2010; and Zinyengere, 2008). The authors recommend training interventions like conferences and workshops in every case regularly. However, the cost is a prohibiting factor (Mnjama, 2010). Zinyengere (2008) sketches a dire picture of the Zimbabwe National Archive where “one of the great difficulties facing the archiving of audiovisual material in Africa in general and moving images in particular, is the lack of trained staff to assume various responsibilities in film and television archives. Most of the staff are graduates in disciplines irrelevant to the film industry or documentation”. Zinyengere (2008) explains that “there is no institution in Africa that teaches Audiovisual Archiving. It is only in Europe and the United States of America... where institutions offer [courses] in audiovisual preservation”.

Häfner (2000:8) foresaw that audiovisual archivists would become multimedia practitioners, instead of focusing on one particular area, owing to the convergence of the different media types such as radio, TV, film, print media, and computers. Audiovisual archivists require a variety of skills (Seeger & Chaudhuri, 2004). These skills include among others, the technical ability to work with audiovisual material. Seeger and Chaudhuri (2004) predicted that as the necessary technology for successfully running audiovisual archives became more complex, the training needs of those using it would increase. In this regard, a survey done by the IASA Broadcast Archive Section (2022) indicated that broadcasters were moving towards the integration of workflows.

Nelson-Strauss, et al. (2022) noticed that training initiatives for audiovisual and multimedia activities in the information environment were on the increase, with countries such as Australia and the USA taking the lead. Nelson-Strauss, et al. (2022) feel strongly that Core knowledge and

skills in digital archiving and preservation must be taught through curricula and course materials that cover the management of digital audio assets and storage systems, the administration and management of archives and collections, and the physical conservation and reformatting of historical audio recording formats.

Therefore, ongoing professional development is required for audiovisual archivists or “media specialists” because of the rapidly changing techniques and products. Various initiatives have been launched to address the problem, notably the PrestoCentre¹⁴, a virtual training center. UNESCO has been a strong advocate for knowledge transfer and learning initiatives in the audiovisual archiving sphere and has over the years initiated various projects and reports to assist in this area.

2.4. SADC Broadcasting Archives

Matangira (2003) believes that the majority of archives in the regions of Eastern and Southern Africa are “still struggling to develop their audiovisual collections”. Matangira (2003) furthermore feels that the complexity and costs to develop and maintain audiovisual archives are demanding much of the already “overstretched budgets of many Third World countries”. In addition, Matangira (2003) feels that very little has been done to develop audiovisual archiving skills, trained staff, and facilities. Zinyengere (2008) supports Matangira in that audiovisual recordings in numerous African nations could potentially may be “endangered” as a result of political will and financial constraints.

As audiovisual archives developed and organizations and societies were formed to create networks and form support groups across the world, Edmondson (2004) wrote that audiovisual archives focused predominantly on the American-European demands, “giving little attention to the realities of developing countries”. However, Edmondson (2004) points out which there is a growing sense of “international consciousness among audiovisual archivists” especially concerning the “inequitable distribution among the “first world” plus the “third world” (Häfner, 2000), leading to the loss of audiovisual memory in numerous regions across the globe. This disparity is reason for concern concerning the preservation of audiovisual archives, and in particular public service broadcasting archives as these archives are rarely well funded, and often lack skilled personnel to ensure the enduring value of the archives. Häfner (2000) explained the discrepancy by citing historical, political, and economic factors.

2.5. Ethiopian Broadcasting Corporation (EBC) Archives

2.5.1. Historical Background of Recordings and Collection at EBC

Under Emperor Haile Selassie, radio became operational in Ethiopia in 1933 and was the country's first radio station. Ethiopian National Radio is a national radio station that broadcasts its programming and news to a global audience via its website, radio, and various online platforms. Haile Selassie's administration saw the initial establishment of Ethiopian Television in 1964. It was made to draw attention to the Organization of African Unity (OAU) conference that year in Addis Ababa. The EBC authority was founded in 2015 with the goals of promoting Ethiopian national and cultural heritage and regulating radio and television broadcasting throughout the nation.https://en.wikipedia.org/wiki/Ethiopian_Broadcasting_CorporationThe Radio records and collections were photography, real tape, cassette, and TV collections were 16mmfilms, 35mm films, 1inch tape, 2 inch tape, Umatic, Betacam, and DVcam stored separately.

2.5.2. Current State of Preserving Multimedia at EBC

The Audio and Video archive at EBC is managed and located separately. Some of the rooms are Located in the Head Quarter, others are far away from the Head Quarter (Branch office).The main concern is not the location but, it is dispersed, inadequate storage space and it is not a suitable environment at all to manage and for preserving the archives. The lack of Air Conditioning (AC), Dust filters, dehumidifiers, and the like exposed the archives to damage.

2.5.3. Transforming to Digitization

Digitization of the archive is the ultimate goal of EBC in order to properly access and secure it for an extended length of time.EBC started as to digitalize both that Radio and Video Archives. But the main limitation of this digital archiving is that the deployed system in inconsistent lack of reliability, low speed, data insecurity and no disaster recovery in case of failure and that is not the only case but also the Obsolescent of playback instruments brought a challenge to capturing the old archives.

2.6 Related Review

In 1941, Zambia launched Radio Lusaka, the country's first radio service. In 1961, Rhodesia Television (RTV) launched a television service. In 1964, Zambia Broadcasting Corporation (ZBC) was reorganized from the Northern Rhodesia Broadcasting Corporation (NRBC) (Simutanyi et al., 2015). VHS, Betacam, DVDs, music on tape, videotapes, audiocassettes, gramophone, news tapes, projector films, compact discs, photos, microfiche, and microfilms are just a few of the many and varied audiovisual materials from all around Zambia that can be found in the National Archives of Zambia (Mukotekwa, 2003; Mulauzi et al., 2014).

Zambia began broadcasting radio in 1941 under the name Radio Lusaka. In 1961, Rhodesia Television (RTV) launched the country's first television service. In 1964, Zambia Broadcasting Corporation (ZBC) was reorganized from the Northern Rhodesia Broadcasting Corporation (NRBC) (Simutanyi et al., 2015). VHS, Betacam, DVDs, music on tape, videotapes, audiocassettes, gramophone, news tapes, projector films, compact discs, photos, microfiche, and microfilms are just a few of the many and varied audiovisual materials that can be found in Zambia's National Archives (Mukotekwa, 2003; Mulauzi et al., 2014).

A vast array of audio-visual resources, including books, sound recordings, movies, and videos, were available at the institutions. The institution digitized the content using a Media Asset Management (MAM) system and Media Rainbow News software to combat technological obsolescence and preserve endangered audio-visual materials. This ensures greater accessibility and extends the materials' lifespan (Mulauzi et al., 2021). According to the same author, the institution's specially designed storage buildings included a theater, a lab, air conditioning, windows that blocked out sunlight and dust, and a dark room where movies and videos could be watched.

Manuscripts, sound recordings, films, and videos were among the many audio-visual resources that the institutions owned. Utilizing a Media Asset Management (MAM) system and Media Rainbow News software, the institution has digitized the content to prevent technological obsolescence and preserve endangered audio-visual materials. This has increased accessibility and extended the materials' lifespan (Mulauzi et al., 2021). The same author pointed out that the institution's specially designed storage buildings included a theater, a lab, air conditioning, windows to keep out direct sunlight and dust, and a dark room for watching movies and videos.

Financial constraints, antiquated technology, a dearth of playback equipment, inadequate training, unreliable backup systems, and inadequate audio-visual storage facilities for preservation are just a few of the difficulties the ZNBC faces (Mulauzi et al., 2021).

The National Archives of Zimbabwe, also known as the National Archives, were founded in 1989 and are still operational with the aim of preserving and organizing public records and archives.

The NAZ is led by a deputy director who acts as the deputy director. The institution's three chief archivists are in charge of managing the different divisions within the company. The three sections are the records center, technical services, and research services. Supervising the day-to-day activities is the responsibility of the audio-visual archivist. A technician is assisting him. The other units that comprise the technical services section are the automation, reprographic, and conservation units. Qualitative interviews are categorized under.

The NAZ's mission is to efficiently and effectively collect, preserve, and make Zimbabwean records available to the general public in a range of formats. The extensive collection of documentary heritage that the NAZ possesses piques the interest of numerous researchers across the globe (Sigauke and Nengomasha, 2011:12). Audiovisuals, film, tapes, photographs, and historical materials dating back to the eighteenth century are all included in the collections of NAZ.

The study looked at the importance of collaboration in the management and preservation of audio-visual archives at the National Archives of Zimbabwe (NAZ), given the challenges this historical resource presents. According to a survey of the literature, managing audio-visuals has proven to be a challenge for the majority of cultural heritage institutions in developing countries. The core tenet is that collaboration ensures effectiveness and efficiency in the management and preservation of video archives.

The National Archives of Zimbabwe (NAZ) staff members who work in the audiovisual unit were surveyed using a mixed method approach that includes interviews and document analysis. The study's guiding theoretical framework was the cooperation theory. Among other things, the study found that the NAZ had been working together and was grateful for the advantages it

offered in the effort to avoid difficulties associated with maintaining and managing audio-visual archives. The NAZ has a massive task ahead of it: digitization.

The results show that collaborative digitization projects need to be looked into and started in order to convert analog audiovisual materials to digital formats. At NAZ, historical non-print materials are gathered and preserved by the audio-visual department. In 1989, an audio-visual unit was used for the first time with permission. The NAZ library was formerly where audio-visual resources were stored and managed.

In 1989, an audio-visual unit was used for the first time with permission. The NAZ library was formerly where audio-visual resources were stored and managed. The NAZ can meet the needs of the general public for information, manage and preserve audio-visual materials under threat, and provide access to information sources that are not physically under its control by forming partnerships or collaborations with related institutions.

The data acquired from staff interviews at the NAZ audiovisual unit and document analysis at the same institution will be presented and interpreted based on themes. Using narrative plain texts, images, tables, and graphs, the qualitative and quantitative data were presented in a clear and easy-to-understand manner.

The website, the visitor's log book, departmental reports, policy documents, the audio-visual unit, the director's annual reports, and other sources provided information for the study. These documents were used in an investigation into the operations of the NAZ audio-visual unit.

The NAZ audio-visual unit has tried to promote collection development by enlisting all pertinent parties in the creation of historically significant audio-visual materials.

The data gathered has shown that, despite the challenges in obtaining audio-visual materials, the audio-visual unit of the NAZ has worked harder to communicate and cooperate with a wider range of stakeholders in order to preserve the history of the country. This has included going to different units to talk about the challenges that have come up with the material transfer. The theory of collaboration, which maintains that new things are created when partners engage in a collaborative process, is supported by these initiatives.

The NAZ audio-visual unit is a member of numerous regional and international professional organizations, including the International Council of Archives (ICA), International Federation of Film Archives (FIAF), Association of Moving Image Archivists (AMIA), International Association of Sound and Audio-visual Archives (IASA), International Federation of Library Associations (IFLA), and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM).

Employees of the NAZ audio-visual unit have been able to participate in a range of domestic and international training programs thanks to collaboration. As a result, their ability to manage and preserve audio-visual materials increased.

Employees of the Zimbabwean National Archives have taken part in combined training programs with other institutions. The audio-visual archivist training workshop, arranged by ESARBICA, was one of the collaborative training-related events held at NAZ in 2011. The Netherlands Film Museum staff exchange program was another collaborative staff training initiative in which the NAZ participated.

Since digitization is a challenging and expensive project, careful planning and thought must go into it before starting any project (Britz & Lor, 2004:216). A limited number of materials have been digitized by the NAZ using internally developed tools. As a potential solution to their funding issues for digitizing their collections, the NAZ can approach the Ministry of Information and Communication Technology as well as other funding bodies like friendly foreign embassies, according to Sigauke and Nengomashe's research study (2011:12).

PRESERVATION OF AUDIO-VISUAL ARCHIVES IN ZAMBIA

RESEARCH OBJECTIVES

The general research objective was to assess the preservation of audio-visual records and archives at the NAZ and the ZNBC. The specific objectives included the following:

- ✓ To find out which types of audio-visual records and archives were kept by the NAZ and the ZNBC.
- ✓ To find out which equipment was used in the storage of audio-visual records and archives at the NAZ and the ZNBC.
- ✓ To establish the measures put in place to ensure long-term accessibility of audio-visual records and archives at the NAZ and the ZNBC.
- ✓ To ascertain the disaster preparedness plans employed to safeguard audio-visual records and archives at the NAZ and the ZNBC.
- ✓ To determine the challenges encountered by the institutions in the preservation of audio-visual records and archives at the NAZ and the ZNBC

RESEARCH METHODOLOGY

A case study design was employed to assess the preservation of audio-visual records at the NAZ and the ZNBC. The study was typically qualitative in nature, resulting in a narrative description of behavior or experience.

The main characteristics of case study research are that it is narrowly focused, provides a high level of details, and is able to combine both objective and subjective data to achieve an in-depth understanding.

Discussion of the findings

From the findings, we can see that none of these respondents had any training in audio-visual preservation and archiving. However, from the findings we can see that their training did cover preservation and archiving of records, but from a general perspective. Ngulube (2003) made a profound statement that, “preservation of records irrespective of their format and media they are captured on hinges on staff with necessary skills and knowledge to deal with records at every

stage of their use by society”. According to Mnjama (2010), this is very appropriate because the handling of audio-visual materials requires trained personnel who are skilled and have some form of education in archives or library studies.

OBJECTIVES OF THE STUDY

The objectives of the study are the need to determine how collaboration between institutions with interests in cultural and heritage information management and preservation can:

- ✓ Avert or reduce the challenges faced by archival institutions;
- ✓ Enhance the effectiveness and efficiency in the preservation of audio- visual archives;
- ✓ Can minimize or avert the digital dilemma of the heavy costs of undertaking digitization projects and
- ✓ Improve and increase accessibility of audio-visual archives.

RESEARCH DESIGN AND METHODOLOGY

A qualitative case study research method was adopted for this research project. The qualitative method was used as it best explores the research problem and provides the flexibility to assess the relevant literature on the topic as well as the comments from the respondents.

RESULTS FINDINGS

The results indicate that in order to convert analog audiovisual materials to digital formats, collaborative digitization projects must be investigated and undertaken. The audio- visual department at NAZ is in charge of gathering and conserving historical non-print material By entering into partnerships or collaborations with related institutions, the NAZ gains the ability to manage and preserve audio-visual materials under threat, meet the information needs of the general public, and grant access to information sources that are not under its physical control.

SIMILARITIES BETWEEN RELATED WORKS OF ZAMBIA AND ZIMBABWE FROM EBC

- ✓ The objectives of the study
- ✓ lack of trained skilled staff
- ✓ Audio-visual recordings and archives play an important role in protecting cultural heritage. However, they are often overlooked and given less importance than paper records, particularly in developing countries. As a result, there is a high risk of loss of information stored in audio-visual format.
- ✓ Financial Constraints

DIFFERENCES BETWEEN RELATED WORKS OF ZAMBIA AND ZIMBABWE FROM EBC

- ✓ A qualitative case study design method was deployed for Zambia and Zimbabwe
- ✓ A descriptive survey of design was deployed as a research method in EBC
- ✓ The result shows that the overall conditions of preservation of multimedia in EBC are in a poor condition.
- ✓ By entering into partnerships or collaborations with related institutions, the NAZ gains the ability to manage and preserve audio-visual materials under threat, meet the information needs of the general public, and grant access to information sources in the case of Zimbabwe.
- ✓ From the findings, we can see that none of these respondents had any training in audio-visual preservation and archiving. However, from the findings we can see that their training did cover preservation and archiving of records, but from a general perspective in the case of Zambia.
- ✓ Lack of collaboration with the other institutions in EBC
- ✓ The archive areas are built on purpose in Zimbabwe and Zambia but not in EBC.
- ✓ Insufficient physical storage and space in EBC.
- ✓ Lack of technically skilled professionals in EBC.

2.7 Conceptual framework

The conceptual framework indicates the current state of multimedia preservation management, challenges in multimedia preservation, and possible strategies for better multimedia preservation in the EBC. As shown in the framework, the current status of multimedia preservation was evaluated in terms of preservation policy, institutional data, environmental condition of the storage, and staff experiences. Different factors affect the preservation of multimedia with in the EBC like absence of skilled technical staff, absence of funding, inadequate archival legislation, inappropriate environmental condition, inadequate storage facilities, and technological obsolescence. The stakeholders have a responsibility to solve these and other challenges that affect the multimedia preservation conditions in the EBC through proper education and training for staff, allocation of enough budget, creating a conducive environment, collaboration with other institutions, digitalization of multimedia materials, and service equipment regularly. Generally, multimedia archive preservation needs the collaboration of technology and stakeholders.

The researcher Found these dimension from the existing working environment towards the way managing multimedia records at EBC and from the related literatures specially in Sub-Saharan African countries.

Even though EBC is one of the oldest states owned electronic media in Africa the status of preserving multimedia is found at the lower level. No one has done the multimedia preservation research in Ethiopia previously. Due to these the researcher takes the initiative to study about EBC's archive which is exposed to many challenges. And the researcher used related knowledge from the literature which has done previously in different African countries electronic media in which multimedia records are available.

The investigator employed primary and secondary data gathering methods. in which questionnaires, Interviews, observations, published and un published reading materials collected.

CONCEPTUAL FRAMEWORK

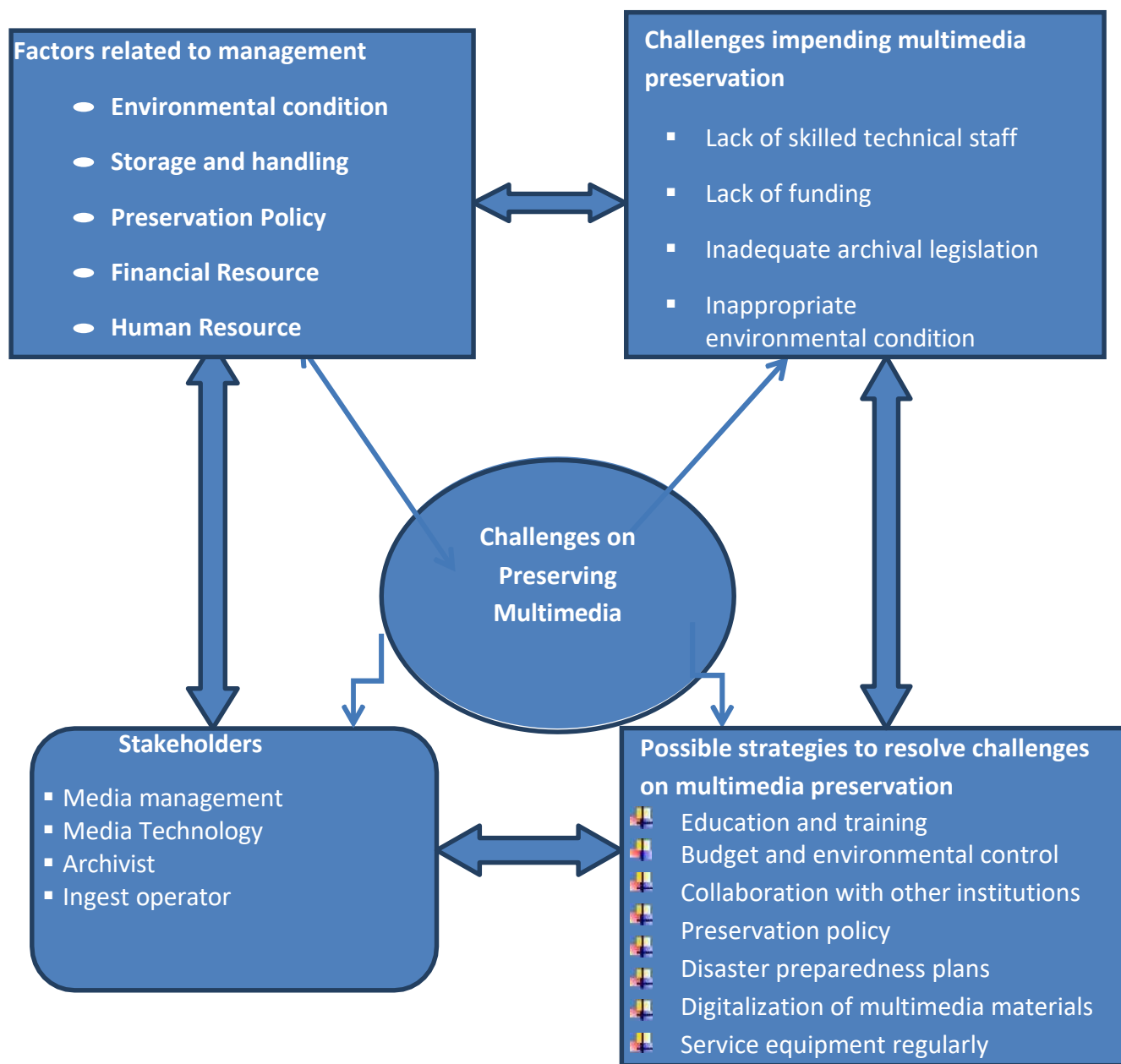


Figure 2 Conceptual framework

Source:(Pati Khan Mazlina a, Ahmad Norzuraiza_Rina c, Khairuddin Irni_Eliana d, Ahmad Uzir Nora'ayue, 2014) Abdullah Siti_Nurul_Maryam b, Ahmad Norzuraiza_Rina c,

A conceptual framework is, by definition, a set of ideas, theories, presumptions, expectations, and beliefs that guide and assist a research project (Maxwell 2013:39). Conceptual frameworks, according to Mugizi (2019), are made up of concepts that can be refined into constructs and given additional value to become variables.

The conceptual framework provides a schematic depiction of the Ethiopian Broadcasting Corporation's (EBC) multimedia preservation program. The conceptual framework outlines the situation of multimedia preservation as it stands today, the difficulties it faces, and potential solutions for improving multimedia preservation in the EBC.

The significance of conceptual frameworks lies in their ability to define research problems, establish theoretical coherence, influence research design and execution, and formulate conceptual conclusions (Berman 2013:2-3). These functions make conceptual frameworks useful. A conceptual framework also directs the literature review process by establishing the themes that it will be organized around.

According to Antonenko (2015), a conceptual framework is a theory-based and evidence-driven viewpoint that is developed to define pertinent concepts, support the problem's importance, provide theoretical and empirical support, direct the choice of suitable methodologies, and conduct data analysis and interpretation.

A conceptual framework is derived from concepts or constructs, according to Ngulube, Mathipa, and Gumbo (2015). It illustrates the relationship between concepts and how they affect the phenomenon being studied.

PRESERVATION POLICY

The strategic level addresses preservation issues at a broader national scale and encompasses organizations that have a larger national impact, make strategic choices, develop preservation programs, advise on and propose legislation or allocate funding, manage professional associations, suggest and carry out scientific research, or provide in-field education. (Hasenay, Damir & Krtalic', Maja, 2012).

Preservation guarantees that collections are safeguarded against potential hazards such as degradation, harm, mishandling, loss, tampering, or obsolescence. Additionally, it guarantees that collections maintain their worth and authenticity and are usable by current and future generations.

The framework for the preservation of EBC's archives is provided by the preservation policy. It lays out the tenets that direct our preservation efforts. These are intended to lessen the primary dangers and challenges to the archives' long-term existence and accessibility.

HUMAN RESOURCES

The archivists' limited knowledge and skills on electronic records management prevented them from implementing the policies and standard procedures on electronic records management which was part of their main responsibilities. (Johare&Masrek, 2011).

FINANCIAL MANAGEMENT

Strategies cannot help policies achieve their objectives without resources in order for them to be effective (Davies, 2000). Financial resources also provide the tools and materials required to make a strategy workable and efficient.

ENVIRONMENTAL MANAGEMENT

Anasi (2013) discovered that women's cultural heritage materials are largely at risk of being lost due to unfavorable tropical climates. Olatokun (2008) has previously observed this position.

STORAGE MANAGEMENT

The fundamentals of storage, which effectively encapsulates every rationale point we invariably encounter when organizing the preservation and handling of materials. Management experts are discovering that a small (20%) portion of an organization's invested efforts typically yield the majority (80%) of its benefits. As a result, both staff members and users need to be knowledgeable about how to handle and store materials properly. However, we must also recognize the significance of the institution and its funds in the process of preserving cultural heritage and spreading knowledge. (Vodopivec, J. 2010).

CHALLENGES ON PRESERVING MULTIMEDIA ARCHIVE

Financial constraints, unfavorable weather, antiquated media, lack of knowledge, lack of access to the unavailability of outdated machinery, and inadequate storage are some of the factors that contribute to this. According to Mnjama (2010), staff members' inability to repair damaged materials was caused by their lack of technical expertise in the restoration of audio-visual materials.

DIGITIZATION

According to the current study, the primary goal of digitization is to increase the materials' lifespan, particularly for those that are endangered. Abankwah (2007) and Schüller (2008), who

argue that it gives institutions the chance to shield the original copies from additional degradation, corroborate these findings. The results also support the contention made by Edmondson (2004) that digitization is an essential component of collection care in audio-visual archives.

PREPAREDNESS PLAN AND DISASTER RECOVERY

All phases of the disaster cycle should be covered by a disaster management plan, including prevention, mitigation, reconstruction, response, and recovery. However, it should be understood that every collection, building, and circumstance is distinct, and that each institution needs to have a disaster plan of its own. Teijgeler (2001).

CHALLENGES ON PRESERVING MULTIMEDIA ARCHIVE

Financial constraints, unsuitable environmental condition, outdated media, lack of knowledge, lack of access to antiquated machinery, inadequate facilities, limited internet access, and inadequate storage are some of the factors that contribute to this. According to Mnjama (2010), staff members' inability to repair damaged materials was caused by their lack of technical expertise in the restoration of audio-visual materials.

Employees and users alike must therefore be knowledgeable about the correct handling and storage of materials, but more than anything, we must recognize the significance of the organization and its offerings in the process of maintaining the Archive materials and disseminating knowledge. (J. Vodopivec; 2010).

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CHAPTER THREE

RESEARCH METHODOLOGY

This study explains the process that was employed to gather and examine the study's data. The population, sample size, sampling technique, research design, and subject selection are all included in this chapter instrumentation.

3.1. Research Approaches

This study used a mixed approach, combining qualitative and quantitative methods. The study can gather various perspectives on the same research field and compare the findings by using the mixed approach as a quality control criterion (Creswell, 2009). A better understanding of the research problem is provided by the mixed-method research approach, which permits the use of both qualitative and quantitative research/data collection tools to investigate research problems (Creswell, 2003).

Therefore, a hybrid strategy aids the researcher in connecting diverse ideas on how the Ethiopian Broadcasting Corporation processed, stored, and protected multimedia resources; methods and technologies used to preserve multimedia materials; the difficulties associated with the preservation of multimedia materials, and suggest strategies for resolving them.

3.2. The Study Design

Since research design makes various research operations easier, it is regarded as the cornerstone of any study. According to Kothari (2004), research design aids in the planning of the procedures to be followed for gathering pertinent data and the strategies to be applied during analysis. In terms of choosing a research design, Kothari (2004) pointed out that an exploratory research design is appropriate if the primary goal of the study is to discover new ideas and insights, and a descriptive research design is appropriate if the goal is to accurately describe a situation. Descriptive survey research design types were appropriately used for this study. In relation to a specific research problem, descriptive research designs offer answers to the questions of who, what, when, where, and how (Kothari, 2004). As a result, a descriptive survey design was used in this study to outline the situation of multimedia preservation as it stands today, as well as the difficulties it faces and the solutions it has found.

3.3 Target Population, Sampling Techniques, and Sample Size

A population is that theoretically defined collection of a study's relevant units or components (Kothari, 2004). The population can consist of people, groups, things, or events from which a sample is taken (Ncala, 2017). The Ethiopian Broadcasting Corporation staff, which includes radio and television archive divisions or units, serves as the study's population (Table 2). 32 employees from the two divisions worked on issues related to multimedia material preservation at EBC.

Sampling is a procedure and a strategy for selecting components from a population sample to represent the entire population (Kothari, 2004). This study used non-probability sampling where some participants might not have the opportunity to be a part of a sample, and probability sampling, where every member of the populace was given a chance. (greater than 0) to be selected for the sample (Creswell, 2009).

Data on the demographics of the entire population in a region are included in the census method, according to Ncala (2017). Information for small ranges may be available, assuming that acceptable reaction rates are achieved.

Access to information for small ranges is possible, provided that acceptable reaction rates are reached. Employees were selected in a census sampling method for survey questions, whereas interview participants were chosen using purposive sampling.

In addition, intentional sampling technique was applied to decide interview participants. By consulting, the in-depth interview participants' diversity was preserved. the EBC radio and television archival and ingestion departments or unit leaders. The participants of the in-depth interview were department leaders, team leaders, archivists, and experts with good and long-term knowledge of EBC multimedia preservation. Based on these criteria, eleven (11) interview participants were selected, and an in-depth interview was administered on multimedia preservation challenges in EBC

The researcher used 11 Journalists to collect detail interviews part purposely. This research explains the process that was employed to gather and examine the study's data.

The researcher in this study used to identify the different types of archive materials that have been available over the years, which differ from generation to generation technologically as a

result of the paradigm shift in technology and the influence of rapid technological advancement on the obsolescence of playbacks.

Table 3.1 The population of the study

Departments/Unit	Number of staff personnel
Audio ingest and archive	14
Audiovisual ingest and archive	18
Total	32

3.4 Data Source and Data Collection Instruments

3.4.1 Data Sources

For the results of empirical research projects such as this one to be regarded as authentic, they must be substantiated by dependable, pertinent, and sufficiently quantitative data. Therefore, extra care was taken to carefully secure the required data in order to guarantee the validity of the current study. Both primary and secondary sources were used in order to achieve this. Using a survey questionnaire, in-depth interviews, and firsthand field observations, Ethiopian Broadcasting Corporation employees from various departments and units were contacted to obtain primary information. A thorough desk review of published and unpublished literature, including institutional reports and documents from EBC, books, peer-reviewed journals, online data, and digitally published media, was one of the many sources from which secondary data was gathered.

3.4.2. Data Collection Instruments

3.4.2.1. Survey Questionnaires

A Creswell (2009) survey is predominantly effective when the purpose is to obtain specific numeric information about trends, opinions, attitudes, and liking or disliking something from a relatively large number of respondents in a short time. According to Stake (2001), the instrument of a survey is a questionnaire that contains a set of questions, statements, scales, and ranks relevant to the phenomenon under investigation. In this study, a survey questionnaire was conducted to collect specific information from actors within EBC multimedia preservation.

Open-ended and closed-ended questionnaires were prepared to collect quantitative and qualitative data from the staff of EBC to assess the current status and policy of multimedia preservation, the methods and technologies used to preserve multimedia materials, the challenges related to the preservation of multimedia materials, and suggest strategies for resolving them.

Therefore, the questionnaire contained four parts: information about respondents (existing condition of multimedia in EBC, strategies and activities for preserving multimedia, skills and experience staff possess regarding preservation and access to multimedia), challenges and proposed strategies for the preservation of multimedia in EBC.

The survey was conducted via face-to-face interview with EBC staff and trained research assistants to collect data during February 2023. In the case of this study, the questions were pre-tested using a sample of five purposively selected staff members of the Ethiopian Broadcasting Corporation (EBC).

3.4.2.2. In- Depth Interview

Checklists that covered topics such as (i) the current state of multimedia in EBC; (ii) how multimedia is stored, processed, and preserved; (iii) the skills and experience of staff regarding preservation; and (iv) difficulties and solutions for the preservation of multimedia in EBC served as the basis for in-depth interviews. According to Skovdal and Cornish (2015), the interviews were conducted until saturation was reached, topics were repeated, and little new material was shared. Since every participant could speak Amharic, all interviews were conducted in that language. Oral and visual information was gathered using digital cameras and audio recorders, which was then transcribed, interpreted, and examined.

3.4.2.3. Observation

In the current study, data was gathered directly through observation. Kumar (2005) defined observation as a potent, systematic, and selective way to watch and listen to a situation or interaction while it is occurring. In order to establish a thorough understanding of the preservation of multimedia at EBC, observation was used to support the data that was gathered using the various data gathering tools described above.

Without participating in any of the activities being carried out by the EBC employees, the researcher observed the personnel in the various departments and the tools at their disposal. The investigator was also given the opportunity to witness the present status of multimedia, how those materials were handled, kept, protected, and retrieved, as well as the staff's preservation expertise and current preservation procedures in the EBC. The data was recorded using digital cameras and audio recorders based on the designed observation checklists.

3.5 Methods of Data Analysis

Data evaluation entails evaluating, classifying, tallying, or otherwise Reassembling the existing data (Kothari, 2004). When collecting the completed questionnaires from each enumerator, the researcher carefully examined each one because editing's aim is to find mistakes and exclusions (Kothari, 2004)2004). Techniques for analyzing data, both quantitative and qualitative, were used in this investigation.

The data was analyzed using the Statistical Package for Social Scientists (SPSS) software version 21.0. from the questionnaire in order to develop descriptive statistics and various tables, graphs, and percentages that would be utilized to explain the many parts of the study. Additionally, different graphs and charts were created utilizing the appropriate tools in MS Excel 2016. Utilizing descriptive statistics, assess the data both statistically, utilizing charts and percentages. Using the narrative description method, qualitative data from in-depth interviews, observations, and document reviews was examined.

The researcher used the term “examining” to indicate whether annual audits, inventories or inspections of records are conducted. In order to analyze interview documents the researcher used narrative techniques. The researcher employs elements known as narrative techniques to construct a story. Narrative techniques encompass various elements, such as dialogue, pacing, description, and reflection.

CHAPTER 4

RESULTS AND DISCUSSION

This chapter discusses the findings of the research in to four sections. The first section presents an overview of the demography of the respondents. The second examines the state of multimedia archives preservation. The third resents the findings on the challenges impeding the preservation of multimedia archives. The fourth section deals with the strategies for the improved preservation of multimedia archives in EBC.

4.1.General Characteristics of Respondents

Data regarding the demographic characteristics such as age, gender, education status, and years of experience of the respondents is provided in the table below (Table 3). With regard to sex composition of the respondents, 18 (56.3%) are male, whereas 14 (43.7%) are female employees. This shows that the majority of the respondents are male in EBC.

Regarding respondents' educational backgrounds, 9 (28.2%), 21 (65.5%), and 2 (6.3%) possess diplomas, BA/BSc and Masters Degrees respectively. This shows majority of respondents, are educated which is an excellent opportunity for a greater understanding of the practice of multimedia preservation in EBC based on the standards and guidelines.

Concerning the experience of the respondents, 5 (15.6%) works in EBC for five years or less, 14 (43.7%) fall in between six and ten years , and 13 (40.7%) works for more than ten years. It is possible to say that the majority of the respondents have been working in EBC for a long period which means they know the institution verywell. This shows that it is possible to get the required information about the preservation of multimedia for the study.

Table 2 General characteristics of respondents

(Gender, educational level, and years of experience)

Variable	Categories	Frequency	Percent (%)
Sex composition	Male	18	56.3%
	Female	14	43.7%
	Total	32	100%
Education Level	Diploma	9	28.2%
	Degree	21	65.5%
	MA/MSc and Above	2	6.3%
	Total	32	100%
Years of work experience in EBC	Less than 5 years	5	15.6%
	6-10 years	14	43.7%
	Above 10 years	13	40.7%
	Total	32	100%

4.2.Current State of Multimedia Archives Preservation in EBC

In this section the results obtained from data collected through questionnaire, interview, and observation on the current state of multimedia are discussed. The five subsections include preservation policy, institutional data and holdings, environmental conditions, storage and handling, and staff skills and experience on multimedia preservation. The subsections were used as indicators to assess the current state of multimedia preservation in EBC.

4.2.1. Preservation Policy

The study sought to assess the existence of a preservation policy at EBC that shows commitment to the preservation of multimedia. The Respondents were asked whether there is preservation policy in EBC or not. 14 (43.8%) respondents replied that there is ‘No’, but 8 (25%) respondents responded ‘Yes’, and 10 (31.2%) respondents were ‘not sure’. Thus, the majority of the respondents (44%) stated that there was no preservation policy, even if it were available, as the interview and observation results claimed. EBC approved a multimedia preservation policy in 2022, but it was not fully implemented in their daily preservation operations. Therefore, the policy of preservation needs to be linked to the work and activities of the archivists who safeguard the collections and implemented accordingly.

4.2.2. Institutional Data and Holdings

All respondents (100%) stated that EBC hosts both the radio and television archives. The two groups managed their archives separately as data obtained from respondents through interview and observation. The other component in this sub section is the types of multimedia materials in the holdings kept. The question presented to the respondents was a multi-response question; therefore, totals do not add up to 100% (Table 4). Accordingly, from 32 respondents, 21 (65.6%) indicated that film was held in EBC holdings; another 24 (75%) stated video as one type of multimedia; sound recordings was mentioned by 26 (81.3%) respondents; and stated by 14 (43.8%) respondents that indicated phonographs were held at the EBC holdings. The least type of multimedia held in EBC holdings were manuscripts, books, and newspapers which were stated by 6 (18.8%) the respondents.

Table 3 Types of multimedia records held at EBC (N=32)

Types of multimedia materials	Frequency	Percent (%)
Film	21	65.6%
Video	24	75%
Sound recordings	26	81.3%
Phonographs	14	43.8%
Manuscripts, books, and newspapers	6	18.8%

In this study, the researcher employed a methodical approach to indicate the extant categories of archival materials, which exhibit generational variations stemming from shifts in technological paradigms and the swift progress of technology impacting playback obsolescence. In addition the physical storage can be facilitated based on the types of the records and its carriers to clarify the nature of the existing Archive collections.

4.2.3. Environmental Conditions for Preserving Multimedia Materials

Environmental conditions and methods of storage have a great influence on the preservation of documents (Hormeku, 2016). The best preventive measures or regulations for multimedia archive preservation are environmental management and providing adequate storage conditions.

Therefore, the researcher set questions to solicit information on the environmental conditions under which the EBC preserved its multimedia materials. The first question inquired if the building had a security camera to protect against unauthorized entry (Table 5).

Table 4 Environmental conditions of multimedia preservation at EBC (N=32)

Environmental conditions	Responses			
	Yes		No	
	Frequency	%	Frequency	%
Security cameras	14	43.7%	18	56.3%
Disaster recovery policy/plans in place	5	15.6%	27	84.4%
Air conditioning	3	9.4%	29	90.6%
De-humidifiers	0	0	32	100
Sprinklers	1	3.1%	31	96.9%
Windows with filtering glass	13	40.6%	19	59.4%
Fire detection system	17	53.1%	15	46.9%

As seen in the above table, 14 (43.7%) respondents indicated that yes, EBC has a security camera in the multimedia archival area; 18 (56.3%) respondents said no. The 5 (15.6%), 1 (3.1%), 13 (40.6%), and 17 (53.1%) respondents said yes to disaster recovery policies and plans in place, sprinklers, windows with filtering glass, and a fire detection system, respectively.

The remaining 3 (9.4%) replied that the building was equipped with air conditioning (Table 5). The 27(84.4%),31(96.9),29(90.6%),19(59.4%),15(46.9%) respondents said no to disaster recovery policies and plans in place, sprinklers, Air Conditioning, windows with filtering glass, and a fire detection system, respectively. However, all respondents stated that the archival area was not equipped with de-humidifiers. The results obtained from interviews and observations confirmed that the multimedia archive preservation in EBC is highly exposed to damage due to high room temperatures, no air conditioning, dust, moisture and humidity. The storage rooms have windows, but not all the windows have filtering glass. In addition, the disaster recovery plan failed after installation.

Overall, this study revealed that EBC was not purpose-built but adapted for multimedia archival use without being adequately equipped with equipment and facilities that made it conducive to prevention and preservation of the multimedia archives. Inadequate archival buildings are a well-documented challenge in sub-Saharan Africa (Komba et al., 2017; Ncala, 2017).

4.2.4 Storage and Handling

Data on how multimedia records were stored was collected through questionnaire, interview, and observation. The respondents explained that EBC has stored and preserved most of its multimedia materials on analogue format which are divided according to their technological generations such as the 16 mm film generation, reel tape, U-matic, Betacam, Cassette, Dvcam etc, whereas recently the EBC used CD, DVD, Flash disk, Hard Disk, Storages, servers, ftp server to store multimedia materials.

The respondents were also asked on how often storage areas within the archives were cleaned. Accordingly, 4 (12%) respondents stated that the place was always cleaned, while 5 (12.5%) and 7 (21.9%) respondents said the storage areas were cleaned sometimes by instruction, and on special occasions, respectively (Table 6). 13 (40.6%) respondents said very seldom, and another 3 (9.4%) respondents said not at all.

During the observation, the researcher noticed that the general cleanliness of the floor was satisfactory; however, the collection was covered with some dust and residue, which calls for carrier cleaning.

Regarding the frequency of multimedia deterioration monitoring, 1 (3.1%) respondent said it was frequent, while 2 (6.3%) respondents said examination was done only on instruction. 4 (12.5%) respondents said multimedia examination was sometimes done on special occasions, while 9 (28.1%) respondents said it was done very seldom; another 16 (50%) respondents said not at all. Information obtained from interviews supports this finding that the examination of archived multimedia deterioration is not frequent.

Table 5 Multimedia storage conditions at EBC (N=32)

Questions	Alternatives	Frequency	Percent (%)
How often is the storage area cleaned?	Always	4	12.5%
	Only on instruction	5	15.6%
	Sometimes, on special occasions	7	21.9%
	Very seldom	13	40.6%
	Not at all	3	9.4%
How often are the multimedia records examined?	Always	1	3.1%
	Only on instruction	2	6.3%
	Sometimes, on special occasions	4	12.5%
	Very seldom	9	28.1%
	Not at all	16	50%

In this subsection, the researcher sought to solicit information whether multimedia were stored in an appropriate location. Respondents were required to tick off all the appropriate storage equipment used from the given list. Because this was a multiple-response question, the totals did not add up to 100% (Table 7). 27 (84.4%) respondents stated that the appropriate storage equipment used had adjustable shelving. 22 (68.8%), 7 (21.9%), and 26 (81.3%) respondents said that the collections were stored in wooden filing cabinets or drawers, steel (metal) filing cabinets or drawers, and film cans, respectively. Though the multimedia archives were stored on adjustable shelves, wooden filing cabinets or drawers, film cans, and steel (metal) filing cabinets, interview and observation results demonstrated that many multimedia materials piled on one another without proper storage equipment.

Table 6 Multimedia storage equipment at EBC (N=32)

Types of multimedia materials	Frequency	Percent (%)
Adjustable shelving	27	84.4%
Wooden filing cabinets or drawers	22	68.8%
Steel (metal) filing cabinet or drawers	7	21.9%
Film cans	26	81.3%

The chart above demonstrates that in order to get the information required to decide whether or not the existing physical storage is appropriate, a survey is required.

4.2.5 Staff Skills and Experience in Multimedia Preservation

The survey aimed at collecting data on the skills and experience that the staffs have regarding preservation of multimedia materials. The data was collected using a questionnaire, interview and observation.

The respondents were asked whether they had received professional training after joining the EBC or not. Accordingly, 9 (28.1%) of the respondents said 'yes' they had received professional training, and 23 (71.9%) responded that they never received professional training in multimedia records after joining the EBC.

The researcher also used interview questions and most of them explained that they never received professional training in multimedia preservation after joining the EBC. It means they were expected to perform their duties with the minimal knowledge compromising the integrity, physical durability, and life span of the collection. This scenario is similar to the recent study of Nsibirwa (2015) and Ncala (2017) that staff responsible for preservation was not adequately trained in preservation management.

Nine respondents were asked the area of expertise they received in multimedia recording after joining the EBC. All the respondents answered 'yes.' The Respondents were required to check all the applicable options. Nine of the respondents indicated their areas of expertise as follows: 3 (33.3%) respondents were trained in analogue multimedia records; 4 (44.5%) of the respondents were trained in digital multimedia records; and the other 2 (22.2%) respondents were trained in multimedia preservation. The technical challenges of dealing with multimedia preservation require special skills (Hormeku, 2016).

Employers reported shortages of skills in film, video, and sound preservation, particularly archivists' skills in digitization, scanning, color correction, and other intricate technical labor, according to Ncala's (2017) research in South Africa. Consequently, more training could be the answer to the expertise gap.

Table 7 Themes of training (N=9)

Area of training	Frequency	Percent (%)
Analogue multimedia records	3	33.3%
Digital multimedia records	4	44.5%
Reformatting	0	0
Multimedia preservation	2	22.2%

This subsection also raises the issue of additional training requirements. This inquiry was necessary to determine whether the responders required additional training. The respondents had to choose every option that applied. Because there were many correct answers, the sums do not equal 100 percent. The following are the numerous areas of competence where more training is required, as shown in Figure 1 below: Digitization was identified as an additional training area by 31 (96.9%) of the respondents. 27 (84.4%) of the respondents said it was important to preserve multimedia. 23 (71.9%) said they needed training in disaster preparation and recovery, while 8 (25%) said they needed training in the investigation of multimedia records. Thus, the result of shows the majority of the respondents needed additional training in digitization, followed by multimedia preservation. The results of this study supported the previous studies by Ocholla and Shongwe (2013) and Nsibirwa (2015), which suggested that training might facilitate and enhance the preservation of multimedia.

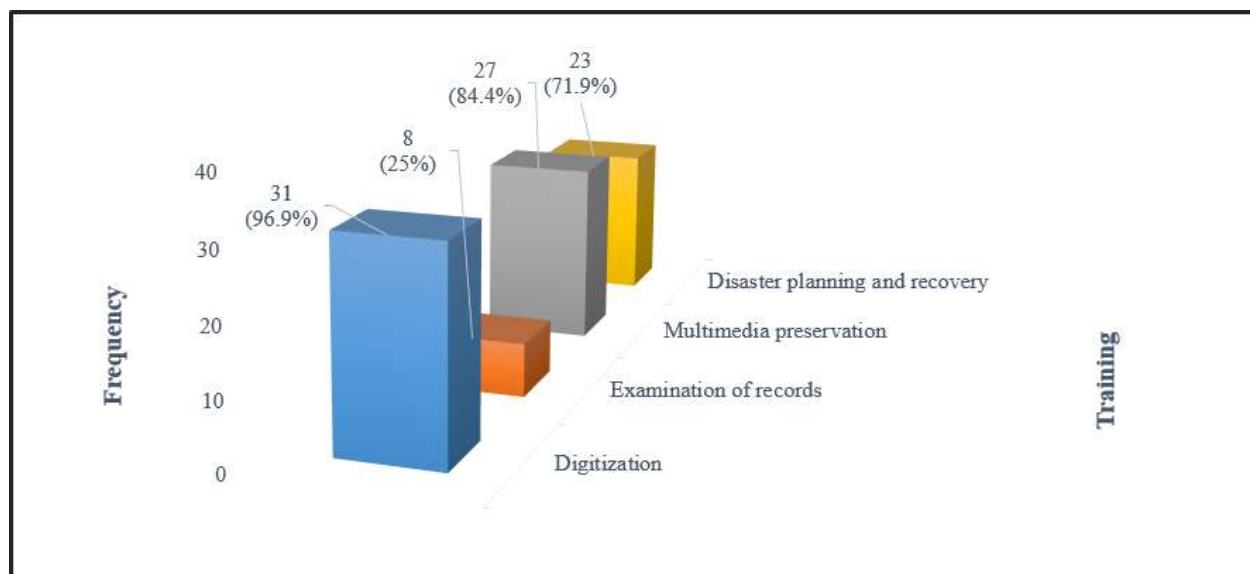


Figure 3 Additional training needs identified by respondents (N=32) (Source: own survey 2023)

4.2.6. Overall Condition of Multimedia Records in EBC

Respondents were asked to judge the general condition of the multimedia materials in order to assess the condition of the multimedia records in EBC. 1 (3.1%) of the respondents said the multimedia record was in great condition overall. 7 (21.9%) of the respondents said it was good, while 5 (15.6%) said it was very good. However, 10 respondents (31.3%) and 9 respondents (28.1%), respectively, stated that it was poor or very poor (Figure 2). The findings showed that the majority of respondents thought the collection was in poor overall condition.

Information obtained from interviews and observations confirmed that the overall condition of multimedia was very poor. This study confirms that carriers in the EBC were not in good condition, or significant parts of the holdings were already damaged or may be in a state beyond recovery and are lost forever. All analog and physical digital film, video, and sound recordings are gradually deteriorating, in some cases catastrophically; the rate of deterioration varies by format, the status of any individual recording, and storage conditions. It is critical to evaluate the collection's general condition and identify the components that are weak and vulnerable.

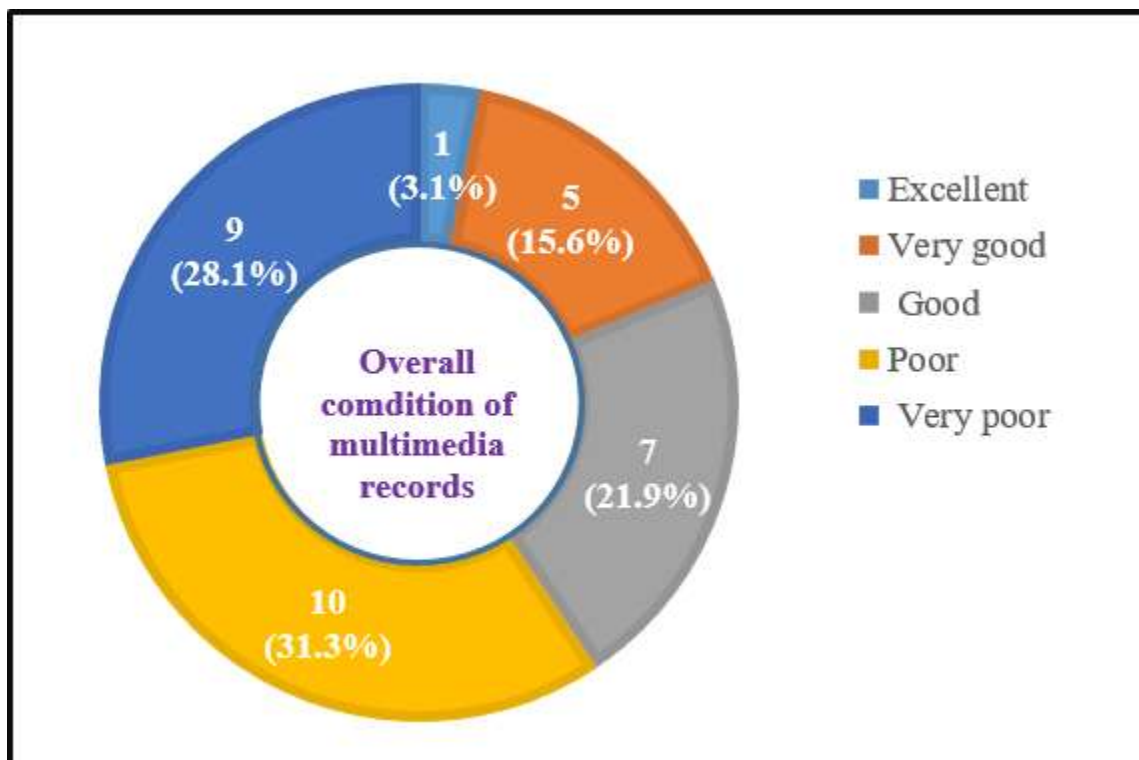
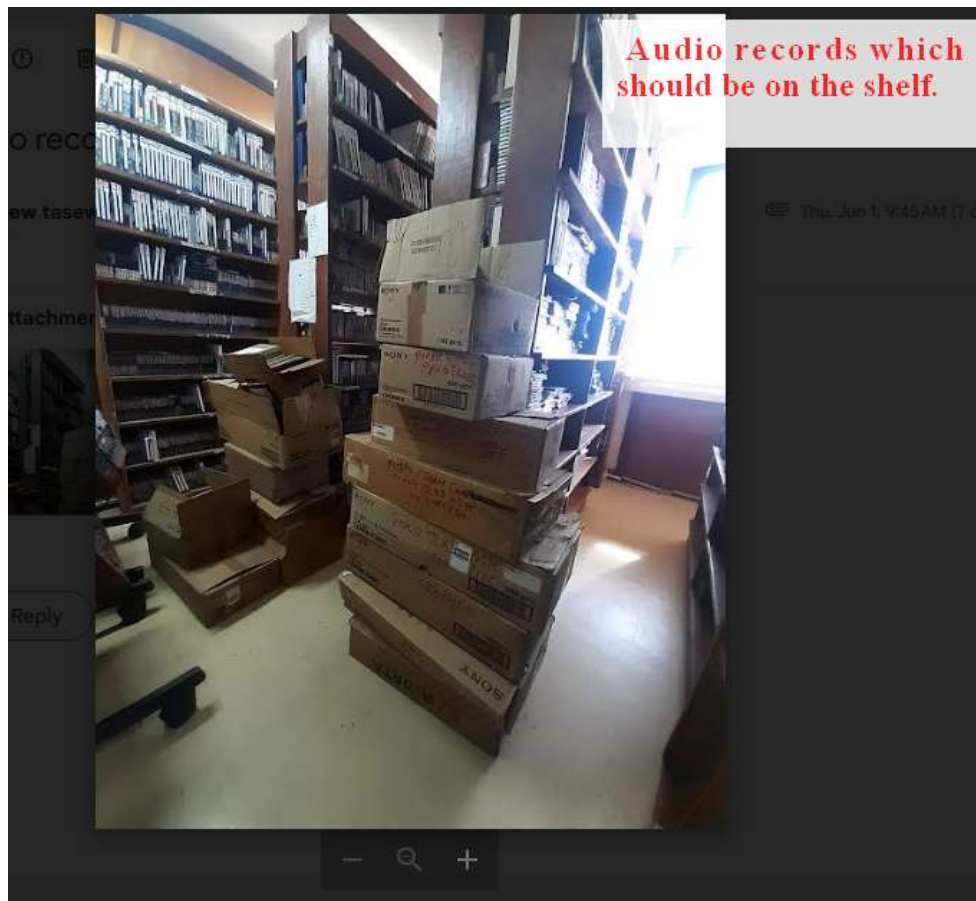


Figure 4. Overall conditions of multimedia records in EBC (N= 32) (Sources: Own Survey, 2023)

4.2.7 .Photographic data from field Observation

As seen from the photographic data below, Audio-visual archives in EBC are vulnerable to damages and obsolescent. The archival materials are scattered here and there without any care. Audio-visual archival materials are deteriorated and damaged as seen from the photograph. Audio records as well as visuals are improperly se and exposed to sunlight which is resulted in damages. Audio records should be stored on shelves, but at EBC audio records are stored in paper boxes .This shows that the Ethiopian Broadcasting Corporation does not give attention to the preservation of its archival resources.







4.3 Challenges Impeding the Preservation of Multimedia Archives in EBC

One of the objectives of this study was to find out whether the Ethiopian Broadcasting Corporation (EBC) faced challenges in preserving its multimedia materials. It was identified that EBC had numerous challenges which ranged from lack of skilled technical staff, inadequate funds, environmental conditions, inadequate archival legislation, inadequate storage facilities, and technological obsolescence. As shown in Table 9, inadequate knowledge, skills, and experience of multimedia archivists are one of the challenges of multimedia preservation in EBC. Concerning this, respondents forwarded their responses as follows: 6 (18.8%) of them strongly agreed, 18 (56.2%) of them agreed, 4 (12.5%) of them didn't know, 3 (9.4%) of them disagreed, and 1 (3.1%) of them strongly disagreed. This shows that 24 (75%) of respondents expressed their agreement, and it implies that the majority of respondents agreed that poorly equipped staff members who can contribute towards the preservation of multimedia archives are a challenge faced by EBC. In many Sub-Saharan African nations, there is a paradoxical lack of funding for multimedia management tasks, including funds to support the management, preservation, and care of multimedia archives (Rakemane and Mosweu, 2021). With this regard, respondents forward their responses as follows: 11 (34.4%) of them strongly agreed, 12 (37.5%) of them agreed, 5 (15.6%) of them didn't know, 3 (9.4%) of them disagreed and 1 (3.1%) of them strongly disagreed. Thus, the result shows that insufficient budget allocation threatened multimedia preservation in EBC. The information obtained from in-depth interviews also confirmed that lack of funds is one of the major challenges in managing and preserving multimedia materials in the EBC.

Table8 Challenges of multimedia preservation in EBC

No	Challenges	SDA (1)		DA (2)		N (3)		AG (4)		SAG (5)		Total	%
		No	%	No	%	No	%	No	%	No	%		
1	Lack of skilled technical staff	1	3.1	3	9.4	4	12.5	18	56.2	6	18.8	32	100
2	Lack of funding	1	3.1	3	9.4	5	15.6	12	37.5	11	34.4	32	100
3	Inadequate archival legislation	4	12.5	5	15.6	6	18.8	11	34.4	6	18.8	32	100
4	Inappropriate environmental condition	1	3.1	2	6.2	0	0	16	50	13	40.7	32	100
5	Inadequate storage facilities	1	3.1	2	6.2	4	12.5	17	53.2	8	25	32	100
6	Technological obsolescence	2	6.2	4	12.5	7	21.9	16	50	3	9.4	32	100

Source: Own survey, 2023.

(Note: SDA=strongly disagree, DA= disagree, N=neutral, AG=agree, SAG=strongly agree).

A robust legal framework is necessary to support the preservation of multimedia archives (Okello-Obura, 2011), but insufficient legislation on multimedia preservation is one of the challenges to their proper preservation in Eastern (where EBC is located) and Southern Africa (Rakemane and Mosweu, 2021). Accordingly, 17 (53.2%) of respondents agree that there is inadequate legislation on multimedia preservation. The remaining 6 (18.8%) respondents were neutral, 5 (15.6%) disagreed, and 4 (12.5%) strongly disagreed that inadequate legislation is a challenge for multimedia preservation. The information obtained from direct observation and in-depth interviews confirmed that EBC approved a policy on multimedia preservation. However, there is a clear gap in the implementation of the policy on multimedia preservation.

Other challenges related to multimedia preservation in EBC are inappropriate environmental conditions, inadequate storage facilities, and technological obsolescence (Table 4). Monitoring and maintaining correct control of temperatures and relative humidity is essential for the preservation of collections (Hormeku, 2016). Regarding environmental conditions in EBC, 29 (90.7%) respondents expressed their agreement on Inappropriate environmental conditions are a major obstacle to the proper preservation of multimedia in EBC. The information obtained from the interview and observation also confirmed that most of the collections in EBC are analog and

stored in different rooms, which are not suitable for the archives to stay in for a long period of time. Some rooms are closed even with no windows available; some are exposed to light, and there are no air-conditioned rooms. Ncala (2017) revealed that chemical issues caused by environmental management have an impact on the preservation and accessibility of audiovisual recordings at the National Media Archives of the Republic of South Africa. For instance, nearly 3.4% of 384 AV records exhibited chemical issues, 0.5% of which were more obvious on video due to crazing. Color fading, peeling, oil-slick surfaces, surface deposits that were rough and held together, the presence of white powder on the edges, and color fading were additional signs of environmental deterioration.

Regarding inadequate storage facilities and technological obsolescence, 25 (78.2%) and 19 (59.4%) respondents expressed their agreement, respectively. The results obtained from interviews supported this result, as storage facilities are the main challenge in EBC. The results of this study are consistent with previous studies that have identified poor storage facilities as one of the paradoxes impeding the preservation of multimedia materials in Sub-Saharan Africa (Rakemane and Mosweu, 2021). Furthermore, according to Muhammad (2019), one of the obstacles to archiving the AV legacy in northern Nigeria is a lack of storage facilities. On the other hand, technological obsolescence is a challenge in the preservation of multimedia archives in Sub-Saharan Africa, according to Rakemane and Mosweu (2021). Mensah et al.'s (2017) study in Ghana also found that physical damage to magnetic tapes, insufficient storage space, outdated technology, and power outages, among other things, were significant barriers impeding the preservation of AV records at the J.H. Kwabena Nketia Archives and the Balme Library AV Unit.

Overall, the results of this study support the previous studies (Hormeku, 2016; Komba et al., 2017; Ncala, 2017; Rakemane and Mosweu, 2021) that reported a lack of skilled technical staff, a lack of funding, inadequate archival legislation, inappropriate environmental conditions, inadequate storage facilities, and technological obsolescence as the main challenges for the preservation of multimedia in EBC. In Tanzania's television broadcasting companies, for example, Komba et al. (2017) studied the preservation and accessibility of audio-visual records. Their research revealed several barriers affecting the preservation and accessibility of audio-visual records, including technological incompatibility, inadequate infrastructure, a lack of

skilled workers, environmental factors, and unclear policies that restrict access to and use of audio-visual records.

4.4 Possible Strategies for the Preservation of Multimedia Archives in EBC

Due to their nature as being more perishable than their paper equivalents and having a comparatively greater preservation cost per unit, multimedia archives must be preserved by archivists (Rakemane and Mosweu, 2021). The next section, therefore, assessed the respondents' proposed strategies for the preservation of multimedia archives based on the following attributes: Table 10 shows that the respondent's responses suggest possible strategies for multimedia preservation in EBC. As a result, 11 (34.4%) of them strongly agreed with education and training, 16 (50%) agreed, 1 (3.1%) didn't know, 3 (9.4%) disagreed, and 1 (3.1%) strongly disagreed. This demonstrates that 27 (84.4%) of the respondents agreed that one effective way to improve the preservation of multimedia in EBC is through staff training.

A previous study by Rakemane and Mosweu (2021) on challenges and strategies for multimedia management and preservation in sub-Saharan Africa revealed that Employees can learn new multimedia preservation skills and knowledge through education and training. The authors also emphasized that information professionals who are familiar with the physical and chemical properties of the materials in their archive holdings are necessary for the preservation of multimedia resources, which is a specialized field of knowledge. As discussed in Section 4.3 on the challenges of multimedia preservation budgets, this is one of the most important components and strategies for the acquisition and maintenance of multimedia. Accordingly, 13 (40.7%) of them agreed strongly, 18 (56.2%) of them agreed, and 1 (3.1%) of them didn't know. This shows that 31 (96.9%) respondents indicated that they agreed, implying that the majority of respondents thought that one of the suggested tactics for enhancing the preservation of multimedia materials in EBC could be the appropriate budget allocation for multimedia preservation. Responses to interview guiding questions also revealed that budget is the main strategy for fulfilling infrastructure for multimedia preservation.

A previous study by NG et al. (2008) highlights the need to evaluate budgetary provisions annually in order to adapt to and deal with rapidly evolving technologies, which necessitates an annual review of the budget process due to their rapid changes.

Environmental control and collaboration with other institutions are other mechanisms pinpointed by respondents for improving multimedia preservation. Accordingly, 27 (84.4%) and 22 (68.8%) of respondents expressed their agreement, respectively. The various factors that contribute to their degradation include temperature, relative humidity, and direct sunlight (Ncala, 2017). Temperature and relative humidity fluctuations are not the best conditions for multimedia material preservation (Mnjama, 2010). Setting CDs and DVDs in direct sunlight is not recommended, according to Setshwane and Oats (2015). Therefore, it is essential to make sure that environmental factors like temperature, relative humidity, and direct sunlight are regularly controlled in order to improve the preservation of multimedia materials.

Therefore, it is essential to make sure that environmental factors like temperature, relative humidity, and direct sunlight are regularly controlled in order to improve the preservation of multimedia materials. One tactic to help with the better preservation of multimedia content in EBC is collaboration. Collaboration can serve as a platform for learning new skills that are necessary to stay relevant in the information environment of the twenty-first century. This includes working with other institutions and information management professionals on projects involving the acquisition, cataloging, classification, subject analysis, training, digitization, archiving, and preservation of multimedia archives (Rakemane and Jain, 2018).

Table 9. Mechanisms for the preservation of multimedia archives in EBC

No	Proposed strategies	SDA (1)		DA (2)		N (3)		AG (4)		SAG (5)		Total	%
		No	%	No	%	No	%	No	%	No	%		
1	Education and training	1	3.1	3	9.4	1	3.1	16	50	11	34.4	32	100
2	Budget	0	0	0	0	1	3.1	18	56.2	13	40.7	32	100
3	Environmental control	0	0	2	6.2	3	9.4	17	53.2	10	31.2	32	100
4	Collaboration with other institutions	2	6.2	4	12.5	4	12.5	13	40.7	9	28.1	32	100
5	Establishing and implementing a preservation policy	1	3.1	1	3.1	2	6.2	15	46.9	13	40.7	32	100
6	Develop and implement disaster preparedness plans	0	0	2	6.2	1	3.1	19	59.5	10	31.2	32	100
7	Digitalization of multimedia materials	0	0	1	3.1	1	3.1	16	50	14	43.8	32	100
8	Service equipment regularly	0	0	1	3.1	2	6.2	17	53.2	12	37.5	32	100

Source: Own survey, 2023.

Note: N is neutral, AG is agreement, SAG is strongly agreement, DA is disagree, and SDA is strongly disagree).

Establishing and implementing preservation policy is indicated by 13 (40.7%) of those surveyed who strongly agreed with its contribution to bettering multimedia preservation in EBC; 15 (46.9%) agreed, 2 (6.2%) disagreed, and 1 (3.1%) strongly disagreed. A crucial instrument for guaranteeing the preservation of multimedia materials is the creation and execution of a preservation policy (Ncala, 2017). According to Rakemane and Mosweu (2021) the preservation policy communicates those both general and specific needs for collection care have been identified, priorities have been set, and resources have been identified for implementation. Regarding developing and implementing disaster preparedness plans for multimedia preservation, 10 (31.2%) of the respondents strongly agreed; 19 (59.5%) did so, 1 (3.1%) did not know, and 2 (6.2%) disagreed. This demonstrates that while 2 (6.2%) respondents disagreed, 29 (90.7%) respondents said they agreed. This suggests that most participants concurred with EBC's need to establish and inform disaster preparedness plans to protect multimedia materials from damage. In agreement with this, A young et al. (2016) claimed that multimedia materials like phonographs, magnetic media, microform, and others can be completely destroyed or damaged by power, water, fire, explosions, and spills of liquid chemicals outages unless a given institution develops and implements a a disaster preparedness strategy to enable prompt response to an emergency that then occurs.

The process of turning information into digital format, known as digitalization of multimedia resources, is regarded as a significant strategy for multimedia preservation in EBC. Accordingly, 16 (50%) of the respondents agreed, 14 (43.8%) of the respondents said they strongly agreed, and 1 (3.1%) of the respondents said they weren't sure. and 1 (3.1%) of them disagreed that multimedia digitalization is the primary strategy that EBC needs to preserve multimedia materials. Accordingly, the earlier study conducted by Rakemane & Mosweu (2021) highlighted the risk of obsolescence for multimedia materials such as CDs, SP records, LP records, EP records, cassette tapes, and open-reel tapes; as a result, digitalization could possibly be applied as a tactic to improve their preservation. Information obtained from the interview also confirmed that digitizing information makes it easier to preserve, access, and share information. The

digitalization of multimedia materials will improve their preservation, management, and accessibility in the future.

Service equipment regularly is another important proposed strategy for multimedia preservation. In this regard, 12 (37.5%) of the respondents indicated their strong agreement, 17 (53.2%) of them agreed, 2 (6.2%) of them didn't know, and 1 (3.1%) of them disagreed that servicing multimedia equipment regularly is the most important strategy that EBC needs to preserve multimedia materials. This study supports the previous study with multimedia materials damaged by equipment that is not serviced (Mensah et al., 2017). According to Rakemane and Mosweu (2021), if multimedia equipment is not serviced properly and on a regular basis, it may fail to access and see the information contained in multimedia recordings. The interview results also indicated that EBC might employ ongoing servicing of multimedia equipment with appropriate resources as one of the relief solutions.

Generally, education and training, budget, environmental control, collaboration with other institutions, establishing and implementing a preservation policy, developing and implementing disaster preparedness plans, digitalizing multimedia materials, and servicing equipment regularly are some of the proposed strategies to improve multimedia preservation in EBC.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The purpose of this study was to evaluate the state of multimedia as it exists today, as well as the primary obstacles and potential solutions for multimedia preservation at Ethiopian Broadcasting Corporation (EBC). The study demonstrates that multimedia material preservation has long been an overlooked aspect of EBC. The preservation policy was deemed unnecessary for their day-to-day preservation efforts.

The results of the study demonstrated that the high room temperatures, lack of air conditioning, dust, and humidity significantly increase the risk of harm to EBC multimedia archive preservation. There are windows in the storage rooms, but not all of them have glass that filters light. The facilities and equipment needed to enable the proper management and protection of the multimedia collection are not adequately provided in the multimedia archival facility. I.e. Film, video, and sound were found to be the forms of the multimedia items that were being looked at. 16 mm and 35 mm film, U-matic, CD, cassette, and open reel cassettes accounted for the bulk of each medium.

The lack of professionals with preservation knowledge is one of the main obstacles to understanding multimedia material collections and their deteriorating problems. The results of the survey revealed that the majority of the personnel (71.9%) had never received professional training in multimedia preservation and other relevant topics; if they lack this crucial preservation component, one should be wary of how they plan to treat multimedia resources.

According to the study, there were several reasons why the EBC was not using multimedia resources effectively, including a lack of qualified technical staff to evaluate and preserve the materials, a lack of funding for managing the resources, unfavorable environmental factors like dust, heat, and humidity, inadequate archival laws, inadequate storage facilities, and outdated technology. Indeed in spite of the fact that the study uncovered that the maintenance of interactive media materials is an neglected calculate in EBC, the preservation of the taking after components can be utilized to upgrade interactive media materials: distributing an satisfactory budget; controlling natural components like temperature, clean, and relative stickiness; creating a crisis activity arrange; giving mixed media hardware on a standard premise; making and emphasizing a conservation rules;

giving instruction and preparing on mixed media materials; cleaning the capacity environment routinely; digitalizing and protecting interactive media materials; and collaborating with other organizations.

5.2 Recommendations

The following recommendations were developed as a result of the research's findings. To begin the process of formalizing preventive preservation—which focuses on steps taken to stop or minimize the ongoing degradation of various multimedia materials—it is advised that EBC implement the established preservation policy.

- ✓ Temperature control is one basic preventive preservation technique that is critical to the collection's survival. Extremely low humidity and temperature are required to postpone chemical deterioration.
- ✓ Because it might be challenging for EBC to handle some of its problems on its own, cooperation is recommended as a workable method of problem resolution. Collaborating leads to shared infrastructure, software, and hardware, which lowers the cost of doing business. It is advised that the EBC make certain that the multimedia materials are stored in appropriate environmental conditions.
- ✓ Create strategies for legacy content transfer, digitization, and the technological obsolescence of equipment. Ensure that the necessary systems are in place to support digitization efforts and facilitate access. Archive staff should receive training and upskilling from the EBC in order to effectively tackle preservation challenges.
- ✓ It is also advised that the EBC create and carry out plans for disaster preparedness.
- ✓ In order to support and facilitate long-term preservation strategies, look into funding options from parties with an interest in the preservation of multimedia materials.

Future Research

- ✓ The chronological aspect of future research might focus on the EBC media gallery and museum.
- ✓ The connections between Archives and Heritage in terms of preservation tactics

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https://en.wikipedia.org/wiki/Ethiopian_Broadcasting_Corporation

APPENDICES

Appendix 1: Questionnaire

ADDIS ABABA UNVERSTIY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

DEPARTMENT OF INFORMATION SCIENCE

Dear Respondent,

I am a student at Addis Ababa University of pursuing a Master's degree. This study is entitled as "CHALLENGES OF PRESERVING MULTIMEDIA ARCHIVES IN THE ETHIOPIAN BROADCASTING CORPORATION (EBC)" to be carried out for research paper as a requirement in partial fulfillment of master's degree. I respectfully request your kind cooperation in answering all questions given in the questionnaire as accurately and frankly as possible. Your responses will be treated strictly confidential and it is going to be used only for academic purpose. You don't need to write your name.

Thank you in advance!!

Instructions: please select the appropriate answer and put '√' sign on the given choice.

Part one: Personal Information

1. Gender: ☐ Female ☐ Male
2. Educational status: ☐ High school completed ☐ Certificate ☐ Diploma ☐ Degree
☐ MA/MSc and above
3. Years of work experience in EBC:
☐ Less than 5 ☐ 6-10 years ☐ More than 10

Part two: Questions related to current state of multimedia archives preservation in EBC

I. Preservation policy

1. Is EBC has a preservation policy? Yes [] No [] Not sure []

II. Institutional data and holdings

2. Which of the following is applicable to your archive(Please tick all the applicable options)

- a) A radio broadcast archive []
- b) A television archive []
- c) A fully multi-media archive []
- d) Other (please specify) _____

3. Is radio and television archive managed separately?

- a) Yes []
- b) No []
- c) Not applicable []

4. Which of the following media is in your archive's collection? (please choose as many as required)

- a) Film []
- b) Video []
- c) Sound recordings []
- d) Photographs []
- e) Manuscripts, books, and newspapers []
- f) Other (please specify) _____

III. Environmental Conditions under which EBC Preserves its multimedia materials

5. Is the multimedia preservation building equipped with? (Please tick all the applicable options)

- | | | |
|--|---------|--------|
| a) Security cameras | Yes [] | No [] |
| b) Disaster recovery policy/plans in place | Yes [] | No [] |
| c) Air conditioning | Yes [] | No [] |
| d) De-humidifiers | Yes [] | No [] |
| e) Sprinklers | Yes [] | No [] |
| f) Windows with filtering glass | Yes [] | No [] |
| g) Fire detection system | Yes [] | No [] |
| h) Other (please specify) | | |
-

IV. Storage and handling

6. How multimedia records stored in your institution? _____

7. How often is the storage area cleaned?

- a) Always ☐
- b) Not applicable ☐
- c) Only on instruction ☐
- d) Sometimes, on special occasions ☐
- e) Very seldom ☐
- f) Not at all ☐

8. How often are the multimedia records examined?

- a) Always ☐
- b) Not applicable ☐
- c) Only on instruction ☐
- d) Sometimes, on special occasions ☐
- e) Very seldom ☐
- f) Not at all ☐

9. The collections are stored in?: (Tick all the appropriate storage equipment used)

- a) Adjustable shelving ☐
- b) Wooden filing cabinets or drawers ☐
- c) Steel (metal) filing cabinet or drawers ☐
- d) Film cans ☐
- e) Other (please specify)

V. Staff skills and experience in multimedia preservation

10. Have you received professional training in preservation of multimedia records after joining EBC?

- a) Yes ☐
- b) No ☐

11. If in question 10 is “Yes”, state the area of expertise (Please tick all the applicable options)

- a) Analogue multimedia records ☐
- b) Digital multimedia records ☐
- c) Reformatting ☐
- d) Multimedia preservation ☐
- e) Other (please specify) _____

12. For which of the following do you feel you need additional training? (Please tick all the applicable options)

- a) Digitization ☐
- b) Examination and assessments of records ☐
- c) Multimedia preservation ☐
- d) Disaster planning and recovery ☐
- e) Other (please specify) _____

13. What is the overall condition of the multimedia recordings in EBC?

- a) Excellent ☐ b) Very good ☐ c) Good ☐ d) Poor ☐ e) Very poor ☐

Part three: Questions related to challenges impeding the preservation of multimedia archives in EBC

14. In the table below, state your views about the challenges approaching the preservation of multimedia archives in EBC?

Challenges	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Skilled technical staff					
Funding and budget					
Archival legislation					
Environmental condition					
Storage facilities					
Technological obsolescence					

Other (please specify) _____

Part four: Questions related to strategies for the improved preservation of multimedia archives in EBC

15. In the table below, state your views about the strategies that can be used by EBC for the preservation of multimedia archives.

Strategies	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Education and training					
Budget					
Environmental control					
Collaboration with other institutions					
Establishing and implementing preservation policy					
Develop and implement disaster preparedness plans					
Digitalization of multimedia materials					
Service equipment regularly					

Other (please specify) _____

Appendix 2: Interview Guiding Questions

1. How do you state the existing condition of multimedia preservation in EBC?
2. How multimedia materials are processed, stored and protected in your institution (EBC)
3. Explain the technology used to preserve multimedia.
4. How do you describe the challenges impending the preservation of multimedia archives in EBC?
5. Describe the strategies that can be used by EBC for the preservation of multimedia archives.

Field Photographs

Deteriorated and damaged audio records



Obsolescent audiovisual players



Audio records improperly set and exposed to sunlight. No AC for all the rooms.



